FUZRR®

PRODUCT CATALOGUE



GUANGZHOU ZHENGNENG ELECTRONIC TECHNOLOGY CO., LTD

THE COMPANY INTRODUCES

Established in 2015, FUZRR Technology is a national high-tech enterprise specializing in the integration of R&D, production, and global distribution of precision power system testers and electrical measurement instruments.

As a trusted partner to leading international and domestic brands, we deliver comprehensive OEM/ODM solutions supported by vertically integrated manufacturing capabilities. Our 8,000-square-meter advanced facility produces over 70,000 high-precision testing devices monthly, all rigorously certified to meet global compliance standards including CE, FCC, ISO 9001:2015, RoHS, and CMC. The company maintains technological leadership through continuous innovation, holding multiple technical invention patents. Our commitment to metrological accuracy is validated by national certification authority approvals and comprehensive quality management systems.

Fuzrr company specializes in manufacturing a comprehensive range of precision electrical testing instruments, including:

- Underground Utilities Locator & Cable Identifiers
- Transformer turns ratio testers (TTR)
- Insulation resistance testers
- Loop resistance tester
- Earth/Ground Resistance Testers
- Power Quality & Power meter
- DC Resistance/Winding Testers
- High/Low Voltage Clamp Meters&Voltage detector
- Digital Multimeters &Digital clamp multimeters

Our products undergo rigorous 100% full-function aging tests to ensure operational safety, High measurement accuracy , and extended service life. Designed with user-centric interfaces and advanced diagnostic capabilities, these instruments combine military-grade durability with laboratory-grade precision.

With over 80% repeat customer retention spanning 5+ years, our solutions have been implemented across 80 countries through a network of 30 authorized distributors. We offer comprehensive OEM solutions including custom calibration, multi-language interfaces, and regional compliance adaptations.

As a trusted solutions provider, our products and services are extensively **applied across four key sectors:**

- Energy & Infrastructure: Power grid systems, coal mining, and petroleum operations
- Industrial Manufacturing: Chemical processing, metallurgical plants, and construction projects
- Transportation Networks:Railway systems and communication infrastructures
- Defense Applications:Mission-critical power management systems

Core Organizational Strengths:

Our vertically integrated structure combines:

- R&D Engineering Unit driving technological innovation
- QA Division maintaining ISO-certified quality standards
- Technical Support Team with field-proven expertise
- Advanced Manufacturing Facilities utilizing Industry 4.0 practices

Differentiated Value Proposition:

- Maintain ISO 9001:2015 quality management system
- Hold 30+ patents in power system optimization technologies
- Achieve 98.7% client retention rate through continuous improvement programs
- Implement employee-centric talent development initiatives

Partnership Commitment:

We are committed to fostering mutually beneficial partnerships through:

- Collaborative solution development
- Transparent business practices
- Long-term value co-creation
- Shared growth roadmapping

Let's discuss how our 360° expertise in power system management can enhance your operational resilience and cost efficiency.

THE COMPANY ENVIRONMENT













HONORARY CERTIFICATE



THE EXHIBITION COMPANY



FIELD APPLICATION



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FR101 Series Miniature Digital Multimeter



- ★ **4000 counts True RMS**
- ★ **DC Voltage: 600V**
- ★ **AC Voltage: 600V**
- ★ **40MΩ resistance measurement**
- ★ **4000uF capacitance measurement**
- ★ **400mA AC / DC current measurement**
- ★ **40kHz Frequency measuring Capability**
- ★ **Battery Test 1.5V / 9V**
- ★ **Continuity Buzzer / Diode**
- ★ **NCV, Red LED Flash**
- ★ **CAT II 600V / CAT III 300V**

PRODUCT APPLICATION

Suitable for professional electrician and electronic technology maintenance and repair,it is an essential and preferred multimeter measuring tool for self-taught electronic technology enthusiasts, families, and factories.

SPECIFICATIONS

Function / Model	FR101A	FR101E	Accuracy
DC Voltage (V)	200mV / 2V / 20 V/ 200V / 600V	400mV / 4V / 40 V/ 400V / 600V	±(0.5%+3)
AC Voltage (V)	2V / 20V / 200V / 600V	4V / 40V / 400V / 600V	±(0.8%+3)
ACV / Bandwidth (Hz)	400Hz	1kHz	-
DC Current (A)	2000uA / 200mA	400uA / 40mA / 400mA	±(1%+5)
AC Current (A)	2mA / 200mA	400uA / 40mA / 400mA	±(1%+5)
Frequency (ACV Hz)	-	40kHz	±(0.5%+5)
Resistance (Ω)	200Ω / 2kΩ / 20kΩ / 200kΩ 20MΩ	400Ω / 4kΩ / 40kΩ / 400kΩ 4MΩ / 40MΩ	±(1%+5) ±(2%+5)
Capacitance (F)	-	40nF / 400nF / 400uF 4000uF	±(4%+5) ±(8%+5)
Battery Test	1.5V / 9V	1.5V / 9V	±(2.5%+5)
FEATURES			
Display Counts	4000	4000	
Auto Range	Auto	Auto	
True RMS	●	●	
NCV(Red LED Flashing)	●	●	
AC Live	●	●	
Continuity / Diode	●		
Auto power off	●		
Backlight / Torch	●		
Power	AAA1.5V×2		
Category Ratings	CAT III 300V CAT II 600V		

FR133 Series Compact Digital Multimeter

FR133D/FR133C/FR133E



- ★ **DC Voltage: 600V 1000V (FR133E)**
- ★ **AC Voltage: 600V 750V (FR133E)**
- ★ **40000uF capacitance measurement (FR133E)**
- ★ **40kHz Frequency measuring capability (FR133E)**
- ★ **20MΩ / 40MΩ resistance measurement**
- ★ **200uA / 400mA AC/DC current measurement**
- ★ **10A AC / DC current measurement**
- ★ **600A AC / DC Curent Clamp (1A=1mV) (FR133E)**
- ★ **Battery Test 1.5V / 9V**
- ★ **True RMS, Buzzer / Diode, NCV / LIVE, Red LED Flash**

PRODUCT APPLICATION

Used for professional electrician and electronic technology maintenance and repair, school electronic technology training, product color dual color injection molding, sturdy and durable, it is a must-have and preferred multimeter measuring tool for self-taught electronic technology enthusiasts,families and factories.

SPECIFICATIONS

Function / Model	FR133D	FR133C	FR133E	Accuracy
AC Voltage (V)	600V 2V / 20V / 200V	600V 2V / 20V / 300V(AUTO)	750V 4V / 40V / 400V (AUTO)	±(1%+5) ±(0.8%+3)
DC Voltage (v)	600V 2V / 20V / 200V 200mV	600V 2V / 20V / 300V(AUTO) 200mV	1000V 4V / 40V / 400V (AUTO) 400mV	±(0.5%+3)
ACV / Bandwidth (Hz)	400Hz	400Hz	400Hz	-
Frequency (Hz)	-	-	10Hz ~ 40KHz	±(0.5%+5)
DC Current (A)	2000uA / 20mA / 200mA - 10A	2000uA / 20mA / 200mA - 10A	400uA 4mA / 40mA / 400mA (AUTO) 10A	±(1%+5) ±(1%+5) ±(2%+5)
AC Current (A)	2000uA / 20mA / 200mA - 10A	2000uA / 20mA / 200mA - 10A	400uA 4mA / 40mA / 400mA (AUTO) 10A	±(1%+5) ±(1%+5) ±(2%+5)
Resistance (Ω)	- 200Ω / 2kΩ / 20kΩ 200kΩ / 20MΩ	- 200Ω / 2kΩ / 20kΩ 200kΩ / 20MΩ	400Ω 4kΩ/40kΩ/400kΩ/20MΩ(AUTO) 4MΩ / 40MΩ	±(1%+5) ±(1%+5) ±(2%+5)
Battery Test	1.5V / 9V	1.5V / 9V	1.5V / 9V	±(2.5%+5)
Temperature (°C)	-	-40°C ~ 1000°C	-40°C ~ 1000°C	±(1.5%+4)
Temperature (°F)	-	-58°F ~ 1832°F	-58°F ~ 1832°F	±(2%+4)
Capacitance (F)	-	-	40nF / 400nF / 400uF 4000uF / 40000uF	±(4%+5) ±(8%+5)
AC/DC600A(Current Clamp)	-	-	0.1A~600.0A (1mV=1A)	±(3%+5)
FEATURES				
Display Counts	2000	2000	4000	
Auto Range	Manual	Semi-Automatic	Semi-Automatic	
True RMS	-	●	●	
Continuity / Diode	●			
Backlight / Torch	●			
Power	AA1.5V×2			
Category Ratings	CAT III 300V CAT II 600V			

FR133 Series Compact Digital Multimeter

FR133F/FR133G



- ★ **Dual color injection molding, sturdy and durable**
- ★ **DC / AC Voltage: 1000V (FR133F 600V)**
- ★ **40MΩ resistance measurement**
- ★ **40000uF capacitance measurement**
- ★ **400mA AC / DC current measurement**
- ★ **10A AC / DC current measurement**
- ★ **HFE(NPN / PNP), Transistor testing (FR133G)**
- ★ **10MHz Frequency measuring Capability (FR133G)**
- ★ **AC / DC600A (Current Clamp) (FR133G)**
- ★ **Temperature 1000°C / 1832°F (FR133G)**
- ★ **True RMS, Buzzer / Diode, NCV / LIVE, Red LED Flash**

PRODUCT APPLICATION

Used for professional electrician and electronic technology maintenance and repair, school electronic technology training, product color dual color injection molding, sturdy and durable, it is a must-have and preferred multimeter measuring tool for self-taught electronic technology enthusiasts,families and factories.

SPECIFICATIONS

Function / Model	FR133F	FR133G	Accuracy
AC Voltage (V)	400mV / 4V / 40V / 400V / 600V	400mV / 4V / 40V / 400V / 1000V	±(0.5%+3)
DC Voltage (v)	4V / 40V / 400V / 600V	4V / 40V / 400V / 1000V	±(0.8%+3)
ACV / Bandwidth (Hz)	1kHz	1kHz	±(0.5%+5)
DC Current (A)	400uA / 40mA / 400mA 10A	400uA / 40mA / 400mA 10A	±(1%+5) ±(2%+5)
AC Current (A)	400uA / 40mA / 400mA 10A	400uA / 40mA / 400mA 10A	±(1%+5) ±(2%+5)
Capacitance(F)	40nF / 400n / 400uF 4000uF / 40000uF	40nF / 400n / 400uF 4000uF / 40000uF	±(4%+5) ±(8%+5)
Frequency(Hz)	10Hz ~ 40kHz	10Hz ~ 10MHz	±(0.5%+5)
Battery Test	1.5V / 9V	-	±(2.5%+5)
HFE	-	0 ~ 1000	-
NCV/Live Phase Squence	NCV / LIVE	NCV / Live Phase Sequence	-
AC/DC600A(Current Clamp)	-	0.1A ~ 600.0A (1mV=1A)	±(3%+5)
Temperature (°C)	-	-40°C ~ 1000°C	±(1.5%+4)
Temperature (°F)	-	-58°F ~ 1832°F	±(2%+4)
FEATURES			
Display Counts	4000		
Auto Range	Auto		
True RMS	●		
Continuity / Diode	●		
NCV (Red LED Flashing)	●		
AC Live	●		
Auto power off	●		
Backlight / Torch	●		
Power	AAA1.5V×2		
Category Ratings	CAT III 300V CAT II 600V		

FR15B+/FR17B+ Auto-Ranging Digital Multimeter

- ★ **6000 counts True RMS**
- ★ **DC Voltage: 1000V (1500V FR17B+)**
- ★ **AC Voltage: 1000V**
- ★ **VFD AC 600V (Variable Frequency)**
- ★ **600A AC / DC Current Clamp (1A=1mV)**
- ★ **60MΩ resistance measurement**
- ★ **60000uF capacitance measurement**
- ★ **20MHz Frequency measuring Capability**
- ★ **10A AC / DC current measurement**
- ★ **Temperature 1000°C / 1832°F (FR17B+)**
- ★ **Continuity / Diode / Duty Cycle**
- ★ **NCV / LIVE , Red LED Flash**
- ★ **Continuity Buzzer Green LED Flash**



PRODUCT APPLICATION

Suitable for professional electronic technology and new energy industries, maintenance and repair, school electronic technology training, product design of LCD-ultra large screen and backlit displays, it is an essential and preferred multimeter measuring tool for self-taught electronic technology enthusiasts and factories.

Electrician power distribution technology installation and maintenance.

SPECIFICATIONS

Function / Model	FR15B+	FR17B+	Accuracy
DC mV	60.00mV / 600mV	60.00mV / 600mV	±(0.5%+3)
DC V	6V / 60V / 600V / 1000V	6V / 60V / 600V / 1500V	±(0.5%+3)
AC mV	60.00mV / 600.0mV	60.00mV / 600.0mV	±(0.8%+5)
ACV / Bandwidth (Hz)	6V / 60V / 600V / 1000V / 1kHz	6V / 60V / 600V / 1000V / 1kHz	±(0.8%+5)
VFD (AC Voltage)	100 ~ 600V / 400Hz	100 ~ 600V / 400Hz	±(4%+5)
DC Current (A)	600.0uA 6mA / 60mA / 600mA 6.000A / 10A	600.0uA 6mA / 60mA / 600mA 6.000A / 10A	±(0.8%+5) ±(0.8%+5) ±(1.5%+5)
AC / DC 600A (Current Clamp)	0.1A ~ 600.0A (1mV=1A)	0.1A ~ 600.0A (1mV=1A)	±(3%+5)
Frequency (Hz) Duty%	10Hz ~ 20MHz 10% ~ 90%	10Hz ~ 20MHz 10% ~ 90%	±(0.5%+5) ±(2%+5)
Resistance (Ω)	600Ω / 6kΩ / 60kΩ / 600kΩ 6MΩ / 60MΩ	600Ω / 6kΩ / 60kΩ / 600kΩ 6MΩ / 60MΩ	±(0.8%+5) ±(2.5%+5)
Capacitance (F)	60nF / 600nF / 600uF 6000uF / 60000uF	60nF / 600nF / 600uF 6000uF / 60000uF	±(4%+5) ±(8%+5)
Temperature (°C)	-	-50°C ~ 1000°C	±(1.5%+4)
Temperature (°F)	-	-58°F ~ 1832°F	±(2%+4)
FEATURES			
Display Counts	6000		
Auto Range	Auto		
True RMS	●		
Continuity / Diode	●		
Continuity(Green LED)	●		
Power	AA1.5V×3		
Category Ratings	CAT III 600V CAT II 1000V		

FR890 Series Digital Multimeter



- ★ **Semi-Automatic**
- ★ **6000 counts True RMS**
- ★ **DC Voltage: 1000V; AC Voltage: 1000V**
- ★ **600A AC / DC Current clamp (1A=1mV)**
- ★ **60MΩ resistance measurement**
- ★ **60000uF capacitance measurement**
- ★ **20MHz Frequency measuring Capability**
- ★ **20A AC / DC current measurement**
- ★ **Temperature 1000°C / 1832°F**
- ★ **Continuity / Diode / Duty Cycle, HFE (NPN / PNP), Transistor testing**
- ★ **NCV / LIVE , Red LED Flash / Continuity / Buzzer Green LED Flash**

PRODUCT APPLICATION

Suitable for professional electronic technology and new energy industries, maintenance and repair, school electronic technology training, product design of LCD ultra-large screen and backlit displays, it is an essential and preferred multimeter measuring tool for self-taught electronic technology enthusiasts and factories.

SPECIFICATIONS

Function / Model	FR890D MAX	FR890C MAX	Accuracy
DC Voltage (V)	60.00mV / 600mV 6V / 60V / 600V (AUTO) 1000V	60.00mV / 600mV 6V / 60V / 600V (AUTO) 1000V	±(0.5%+3) ±(0.5%+3) ±(0.8%+5)
AC Voltage (v)	6V / 60V / 600V / Hz (AUTO) 1000V	6V / 60V / 600V / Hz (AUTO) 1000V	±(0.8%+5) ±(1%+5)
ACV / Bandwidth (Hz)	1kHz	1kHz	-
DC Current (A)	600uA 6mA / 60mA / 600mA (AUTO) 6.000A / 20A	600uA 6mA / 60mA / 600mA (AUTO) 6.000A / 20A	±(0.8%+5) ±(0.8%+5) ±(2%+5)
AC Current (A)	600uA 6mA / 60mA / 600mA (AUTO) 6.000A / 20A	600uA 6mA / 60mA / 600mA (AUTO) 6.000A / 20A	±(1%+5) ±(1%+5) ±(2%+5)
AC/DC 600A (Current Clamp)	0.1A ~ 600.0A (1mV=1A)	0.1A ~ 600.0A (1mV=1A)	±(3%+5)
Frequency (Hz) Duty	10Hz ~ 20MHz 10% ~ 90%	10Hz ~ 20MHz 10% ~ 90%	±(0.5%+5) ±(1%+5)
Resistance (Ω)	600Ω 6kΩ / 60kΩ / 600kΩ (AUTO) 6MΩ / 60MΩ	600Ω 6kΩ / 60kΩ / 600kΩ (AUTO) 6MΩ / 60MΩ	±(2%+5) ±(1%+4) ±(2.5%+4)
Capacitance (F)	60nF / 600nF / 6uF / 60uF / 600uF / 6mF / 100mF	60nF / 600nF / 6uF / 60uF / 600uF / 6mF / 100mF	±(4%+4) ±(8%+4)
HFE(NPN / PNP)	0~1000	0~1000	-
Battery Test	1.5V / 9V	-	±(2.5%+4)
Temperature (°C)	-	-50°C~1000°C	±(1.5%+4)
Temperature (°F)	-	-58°F~1832°F	±(2%+4)
FEATURES	Display Counts		
Auto Range	6000		
True RMS	Semi-Automatic		
Continuity / Diode	●		
Continuity (Green LED)	●		
Power	●		
Category Ratings	AA1.5V×2		
	CAT III 600V CAT II 1000V		

FR17 Series Digital Multimeter



★ **AC voltage/current frequency response:40Hz~500Hz**

★ **Power supply:Two 1.5V batteries (2xAA)**

★ **True valid value**

★ **Over range alarm**

★ **Automatic shut-down, Low voltage indication**

★ **Full range protection**

PRODUCT INTRODUCTION

The FR17 series digital universal meter is a multifunctional, multi-range, multi-purpose electronic measurement instrument, which is widely used in physical, electrical, electronics and other fields. This instrument uses a new large digital LCD screen design, with interchange voltage, current, resistance, capacitance, temperature, frequency, diode, NCV voltage induction, zero fire detection and other measurement functions. The whole machine is beautiful and high-end, the range is wide, the resolution is high, the operation is convenient, the carry is convenient, the accurate, reliable, and stable performance,andstrong anti-interference ability. In addition, it has a shock-proof, dust-proof, and moisture-proof structure. It is a commonly used and indispensable instrument for telecommunications, power, machine rooms, mechanical installation and maintenanceas industrial enterprises that use power as industrial power or energy.

TECHNICAL PARAMETERS

Model	FR17B	FR17C
Maximum count	4000 count	6000 count
Range switching	Automatic	Automatic
DC voltage	0.00mV~750V± (0.5% +3)	0.00mV~1000V± (0.5%+3)
AC voltage	0.00mV ~ 600V± (0.8%+5)	0.00mV~750V± (0.8%+5)
DC current	0.0uA~ 10.00A± (1.2%+3)	0.0uA~20.00A± (1.2%+3)
AC current	0.0uA~ 10.00A± (1.5%+3)	0.0uA ~ 20.00A± (1.5%+3)
Capacitance	0.000nF ~ 40.00mF± (3.0%+5)	0.000nF ~ 100.0mF± (3.0%+ 5)
Resistance	0.0Ω ~40.00MΩ± (1.0%+3)	0.0Ω ~ 60.0MΩ± (1.0 %+ 3)
Frequency	0.00 Hz~ 10.00M Hz± (1.0%+3)	
Duty cycle	0.0% ~99.9%± (1.0%+3)	
Temperature	-20 - 1000 degrees Celsius; - 4 - 1832 degrees Fahrenheit; +1.0% of reading or ± 3°C	
AC Voltage/Current Frequency Response	40Hz~500Hz	
True valid value	●	
Max/Min	●	
Data retention	●	
Diode	●	
Continuity test	●	
NCV voltage detection	●	
Zero fire line judgment Flashlight	●	
Test lead port indication	●	
LCD screen display	●	
Backlight	●	
Low voltage indication	●	
1 meter drop test	●	
Safety level	CAT III 1000V/ CAT IV 600V	
IP	IP45	

FR705 Series Solar MPPT Power Tester



- ★ **Small external dimensions; easy to carry**
- ★ **Designed with large LCD to display all parameters compact and portable whole machine**
- ★ **Manual / Auto mode**
- ★ **Protection against overtemperature, overvoltage, and overcurrent**
- ★ **Protection against reverse connection**
- ★ **Overload protection**

PRODUCT APPLICATION

FR705 Series Solar MPPT Meter can measure the maximum power of solar module rapidly. It has the ability to measure the maximum power (Pmax) , open-circuit voltage (Voc), and short-circuit current (Isc) at the same time and display all parameters on the screen. MPPT is the most important indicator for judging if a solar panels generates power in low efficiency, and is commonly used for measuring solar panels or troubleshooting faulty module.

Application fields: Manufacturers of solar panels, users of solar panels, etc.

SPECIFICATIONS

Model	FR705	FR705E
PMAX (W)	1000W	2000W
Vmp (V)	12 ~ 80V	12 ~ 150V
Amp (A)	35A	45A
Voc (V)	12 ~ 80V	12 ~ 150V
Isc (A)	35A	45A
FEATURES		
Large screen display	3.2 Inch	
Manual / Auto Range	Manual / Auto	
Beep notification	●	
Backlight	●	
Auto Power Off	●	
Low Battery Indication	●	
Data Hold	●	
Reverse input protection	●	

FR200 Series Clamp Digital Multimeter

FR201E/FR202E



- ★ **AC Current: 600A (FR201E / 500A)**
- ★ **Temperature measure: 1000°C**
- ★ **AC / DC Voltage: 600V**
- ★ **20MΩ / 40MΩ Resistance Measuring Capability**
- ★ **4000uF Capacitance Measuring Capability**
- ★ **40kHz Frequency Measuring Capability**
- ★ **Continuity / Diode / Duty Cycle**
- ★ **Max / Min, Backlight & Data Hold**
- ★ **NCV / LIVE ,Red LED Flash & Continuity Buzzer**
- ★ **Torch Build In Functions As Measuring Assistance**
- ★ **Clamp Jaw opening 30mm**

PRODUCT APPLICATION

Electrician power distribution technology installation and maintenance.Industrial construction, factory production and distribution system installation, maintenance and repair.

SPECIFICATIONS

Function / Model	FR201E	FR202E	Accuracy
AC Current (A)	2.000A 20A / 200A / 500A	4.000A 40A / 400A / 600A	±(3.5%+30) ±(2%+5)
DC Voltage (V)	200mV / 2V / 20V / 600V	400mV / 4V / 40V / 600V	±(0.5%+3)
AC Voltage (V)	2V / 20V / 600V	4V / 40V / 600V	±(0.8%+3)
ACV / Bandwidth (Hz)	400Hz	400Hz	-
Frequency (ACV Hz)	-	10Hz ~ 40kHz	±(0.5%+5)
Resistance (Ω)	200Ω / 2kΩ / 20kΩ / 200kΩ 2MΩ / 20MΩ	400Ω / 4kΩ / 40kΩ / 400kΩ 4MΩ / 40MΩ	±(1%+5) ±(2%+5)
Capacitance (F)	-	40nF / 400nF / 400uF 4000uF	±(4%+5) ±(8%+5)
Temperature (°C)	-	-20°C ~ 1000°C	±(1.5%+4°C)
FEATURES			
Display Counts	2000	4000	
Jaw Opening	Φ30mm		
Auto Range	●		
True RMS	●		
Continuity / Diode	●		
NCV (Red LED Flashing)	●		
AC Live	●		
Auto power off	●		
Max / Min	●		
Zero / Rel	●		
Backlight / Torch	●		
Battery	AAA1.5V×2		
Category Ratings	CAT III 300V CAT II 600V		

FR200 Series Clamp Digital Multimeter

FR203E/FR204E



- ★ **DC / AC Current: 400A (FR203E)**
- ★ **DC / AC Current: 600A (FR204E)**
- ★ **LowZ 100V ~ 600V**
- ★ **AC / DC Voltage: 600V**
- ★ **40MΩ / 60MΩ Resistance Measuring Capability**
- ★ **4mF / 60mF Capacitance Measuring Capability**
- ★ **40kHz / 60kHz Frequency Measuring Capability**
- ★ **Temperature measure: 1000°C / 1832°F**
- ★ **NCV / LIVE, Red LED Flash & Continuity Buzzer**
- ★ **Torch Built-In Functions As Measuring Assistance**
- ★ **Clamp Jaw opening 28mm**

PRODUCT APPLICATION

Electrician power distribution technology installation and maintenance. Industrial construction, factory production and distribution system installation, maintenance and repair.

SPECIFICATIONS

Function / Model	FR203E	FR204E	Accuracy
DC Current (A)	40A / 400A	60A / 600A	±(2%+5)
AC Current (A)	40A / 400A	60A / 600A	±(2%+5)
DC Voltage (V)	600V	600V	±(0.5%+3)
AC Voltage (V)	600V	600V	±(0.8%+3)
LowZ AC Voltage (V)	-	600V	±(1.5%+5)
ACV / Bandwidth (Hz)	400Hz	1kHz	-
ACA / Bandwidth (Hz)	60Hz	60Hz	-
Frequency (ACV Hz)	40kHz	60kHz	±(0.5%+5)
Resistance(Ω)	400Ω / 400kΩ 4MΩ / 40MΩ	600Ω / 600kΩ 6MΩ / 60MΩ	±(1%+5) ±(2%+5)
Capacitance (F)	40nF / 400uF 40000uF	60nF / 600uF 60mF	±(4%+5) ±(8%+5)
Temperature (°C)	-	-50°C~1000°C	±(1.5%+4)
Temperature(°F)	-	-58°F~ 1832°F	±(2%+5)
FEATURES			
Display Counts	4000	6000	
ACV LowZ	-	●	
Jaw Opening	Φ28mm		
Auto Range	●		
True RMS	●		
continuity/ Diode	●		
Auto power off	●		
Backlight / Torch	●		
Battery	AAA1.5V×2		
Category Ratings	CAT III 300V CAT II 600V		

FR206E DC Power Clamp Multimeter



- ★ **DC Power: 1020kVA**
- ★ **DC / AC Current: 600A**
- ★ **High Voltage: AC1000V / DC1700V**
- ★ **VFD Frequency changing Circuit Measuree**
- ★ **60MΩ Resistance Measuring Capability**
- ★ **60mF Capacitance Measuring Capability**
- ★ **60kHz Frequency Measuring Capability**
- ★ **Continuity / Diode / Duty Cycle**
- ★ **Max/Min, Backlight & Data Hold Zero**
- ★ **NCV / LIVE , Red LED Flash & Continuity Buzzere**
- ★ **Torch Build In Functions As Measuring Assistance**
- ★ **Clamp Jaw opening 28mm**

PRODUCT APPLICATION

New energy solar power generation circuit system. Circuit detection and maintenance of new energy vehicles. Installation and maintenance of newenergy charging pile.

EV charging landscape. Installation and maintenance of electrician room and air conditioning system

SPECIFICATIONS

Function / Model	Range	Accuracy	Tolerance
DC Power (kVA)	1020kVA	0.01VA	±(3%+30)
DC Current (A)	60A / 600A	0.01A	±(2%+5)
AC Current (A)	60A / 600A	0.01A	±(2%+5)
DC High Voltage (V)	1700V	0.01V / 1V	±(2%+10)
AC High Voltage (V)	1000V	0.01V / 1V	±(2%+10)
DC Voltage (V)	600V	0.01V	±(0.5%+3)
AC Voltage (V)	600V	0.01V	±(0.8%+3)
ACV / Bandwidth (Hz)	1kHz	-	-
ACA / Bandwidth (Hz)	60Hz	-	-
Frequency (ACV Hz)	60kHz	0.001Hz / 0.001kHz	±(0.5%+5)
Resistance (Ω)	600Ω ~ 600kΩ 6MΩ ~ 60MΩ	0.1Ω / 0.001kΩ 0.001MΩ	±(1%+5) ±(2%+5)
Capacitance (F)	6nF~600uF 6mF / 60mF	0.001nF / 0.001uF 0.01mF	±(4%+5) ±(8%+5)
Temperature (°C)	1000°C	1°C	±(1.5%+4)
Temperature (°F)	1832°F	1°F	±(2%+5)
FEATURES			
Display Counts	6000		
Auto Range	●		
True RMS	●		
ACV VFD	●		
Continuity / Diode	●		
Auto power off	●		
Backlight / Torch	●		
Battery	AAA1.5V×2		
Category Ratings	CAT III 300V CAT II 600V		

FR207 Series Clamp Digital Multimeter



- ★ **DC / AC Current: 1000A**
- ★ **AC Voltage: 1000V**
- ★ **DC Voltage: 1700V (FR207C 1000V)**
- ★ **LowZ 100V ~ 1000V**
- ★ **60MΩ Resistance Measuring Capability**
- ★ **60mF Capacitance Measuring Capability**
- ★ **10MHz / 20MHz Frequency Measuring Capability**
- ★ **Temperature measure: 1000°C / 1832°F**
- ★ **NCV / LIVE, Red LED Flash & Continuity Buzzer**
- ★ **Clamp Jaw opening 42mm**

PRODUCT APPLICATION

Electrician power distribution technology installation and maintenance. Industrial construction, factory production and distribution system installation, maintenance and repair.

SPECIFICATIONS

Function / Model	FR207C	FR207D	Accuracy
AC Current (A)	60 / 600 / 1000A	60 / 600 / 1000A	±(2%+5)
INRUSH Current (A)	60 / 600 / 1000A	60 / 600 / 1000A	±(2%+5)
DC Current (A)	60 / 600 / 1000A	60 / 600 / 1000A	±(2%+5)
DC High Voltage (V)	1000V	1700V	±(0.5%+5)
AC High Voltage (V)	1000V	1000V	±(0.5%+5)
LoWZ AC / DC Voltage (V)	100 ~ 1000V	100 ~ 1000V	±(1.5%+5)
ACV / Bandwidth (Hz)	1kHz	1kHz	-
ACA / Bandwidth (Hz)	60Hz	60Hz	-
Frequency (Hz)	10Hz	20MHz	±(0.5%+5)
Resistance (Ω)	600Ω / 6kΩ / 60kΩ / 600kΩ 6MΩ / 60MΩ	600Ω / 6kΩ / 60kΩ / 600kΩ 6MΩ / 60MΩ	±(1%+5) ±(2%+5)
Capacitance (F)	60nF / 600nF / 600uF 6000uF / 60000uF	60nF / 600nF / 600uF 6000uF / 60000uF	±(4%+5) ±(8%+5)
Temperature (℃)	-	1000°C	±(1.5%+4)
Temperature (°F)	-	1832°F	±(2%+5)
FEATURES			
Display Counts	6000		
Auto Range	●		
True RMS	●		
ACA PEAK	●		
ACV VFD	●		
Continuity / Diode	●		
NCV (Red LED Flashing)	●		
AC Live	●		
Max / Min	●		
Zero / Rel	●		

FR210 Series Miniature Clamp Digital Multimeter



- ★ **4000 / 6000 counts True RMS**
- ★ **AC / DC Current: 2.000A~200A**
- ★ **AC / DC Voltage: 600V**
- ★ **VFD AC 600V (Variable Frequency) voltage measurement**
- ★ **40MΩ / 60MΩ Resistance Measuring Capability**
- ★ **4000uF / 60000uF Capacitance Measuring Capability**
- ★ **40kHz / 60kHz Frequency Measuring Capability**
- ★ **Temperature 1000°C / 1832°F**
- ★ **Continuity / Diode / Duty Cycle**
- ★ **NCV / LIVE ,Red LED Flash & Continuity Buzzer**
- ★ **Torch Build In Functions As Measuring Assistance**
- ★ **Clamp Jaw opening 20mm**

PRODUCT APPLICATION

Suitable for new energy and energy-saving household appliances, such as variable frequency air conditioners, frequent frequency washing machines, variable frequency motors, etc., capable of accurately measuring small currents, And it is a necessary and preferred clamp gauge measuring tool for electricians and electrical maintenance technicians.

SPECIFICATIONS

Function / Model	FR210C	FR210E	FR210D	Accuracy
DC Current(A)	20.00A / 200A	2.000A 20A / 200A	2.000A 20A / 200A	±(3.0%+30) ±(2%+5)
AC Current (A)	20.00A / 200A	2.000A / 20A / 200A	20.00A / 200A	±(2%+5)
DC Voltage (V)	400mV / 4V / 40V / 600V	600mV / 6V / 60V / 600V	600mV / 6V / 60V / 600V	±(0.5%+3)
AC Voltage (V)	4V / 40V / 600V	6V / 60V / 600V	6V / 60V / 600V	±(0.8%+3)
VFD (AC Voltage) Variable Frequency	-	100 ~ 600V / 400HZ	100~600V / 400Hz	±(4%+5)
ACV / Bandwidth (Hz)	400Hz	1kHz	1kHz	-
Frequency (ACV Hz)	10Hz~ 40kHz	10Hz ~ 60kHz	10Hz ~ 60kHz	±(0.5%+5)
Resistance (Ω)	400Ω / 400kΩ 4MΩ / 40MΩ	600Ω / 6kΩ / 60kΩ / 600kΩ 6MΩ / 60MΩ	6000Ω / 600k 6MΩ / 60MΩ	±(1%+5) ±(2%+5)
Capacitance (F)	40nF / 400nF / 400uF 4000uF	60nF / 600nF / 600uF 6000uF / 60000uF	60nF / 600nF / 600uF 6000uF / 60000uF	±(4%+5) ±(8%+5)
Temperature (°C)	-	-	-50°C~1000°C	±(1.5%+4)
Temperature (°F)	-	-	-58°F~1832°F	±(2%+5)
FEATURES				
Display Counts	4000	6000	6000	
VFD (Variable Frequency)	-	●	●	
Auto Range	●			
True RMS	●			
Continuity / Diode	●			
AC Live	●			
Auto power off	●			
Backlight / Torch	●			
Power	AAA1.5V×2			
Category Ratings	CAT III 300V CAT II 600V			

FR205 Series Digital Clamp Multimeter



★ **Range switching:Auto**
★ **AC Voltage/Current Frequency Response:40Hz ~ 500Hz**
★ **NCV Voltage Detection**
★ **Over range Alarm**
★ **Automatic Shutdown**
★ **Low voltage indication**
★ **Full Range Protection**
★ **LCD Display**

PRODUCT INTRODUCTION

FR205 series digital clamp multimeter is a multifunctional, multi-range, multi-purpose electronic measuring instrument, which is widely used in electronic and electrical fields. This instrument uses a new digital LCD display design, equipped with high-tech induction clamps, easy to operate, high efficiency, farewell to the traditional way of measuring current. At the same time, it has measurement functions such as AC and DC voltage, resistance, capacitance, temperature, frequency, diode, NCV voltage sensing, and zero fire detection. The whole machine is beautiful and high-grade, with wide measuring range, high resolution, convenient operation, easy to carry, accurate, reliable, stable performance and strong anti-interference ability. Moreover, it has a shockproof, dustproof, and moisture-proof structure, and is the preferred electrical measurement tool for electronic electricians.

TECHNICAL PARAMETERS

Model	**FR205B**	**FR205D**
Maximum count	4000 Count	6000 Count
Range switching	Auto	
DC voltage	0.1mV~400.0V±(0.8%+5)	0.1mV~600.0V±(0.8%+5)
AC voltage	0.000V~400.0V±(0.8%+5)	0.000V~600.0V±(0.8%+5)
DC Current	-	0.00A~600.0A±(2.0%+5)
AC Current	0.00A~400.0A±(2.0%+5)	0.00A~600.0A±(2.0%+5)
Capacitance	0.000nF~40.00mF±(3.0%+5)	0.000nF~100.0mF±(3.0%+5)
Resistance	0.0Ω~40.00MΩ±(1.0%+3)	0.0Ω~60.00MΩ±(1.0%+3)
Frequency	1.00Hz~10.00MHz±(1.0%+3)	
Duty cycle	0.1%~99.9%±(1.0%+3)	
Temperature	-20~1000 Degree Celsius;-4 - 1832 Fahrenheit Degree;±1.0% reading or±3°C	
AC Voltage/Current Frequency Response	40Hz~500Hz	
Jaw size	28mmx42mm	
True RMS	●	
Max/Min	●	
Data retention	●	
Diode	●	
On-off test	●	
Zero/Fire-line judgment	●	
1 Meter Drop Test	●	
Backlight	●	
LCD Size	38.8mmx30mm	
Electric Supply	Two 1.5V batteries (2xAAA)	
Safety Grade	CAT III 600V/ CAT IV 600V	
Product Weight	Approx. 332g(without battery)	
Meter Size	218mmx76mmx38mm	
IP	IP45	

FR030A AC clamp-on current sensor



- ★ **AC 600A**
- ★ **Output: 1A / 1mV AC**
- ★ **Output line (Bourdon tube extension wire) 2m**
- ★ **CAT II 600V / CAT III 300V**

PRODUCT APPLICATION

Suitable for professional electricians, electrical maintenance and repair, special testing applications, and is an essential external current clamp measuring tool for factory and distribution control system maintenance.

SPECIFICATIONS

Function	Range	Accuracy
Max AC Current	AC 600A	±(2%+0.5A)
OUT AC mV	1mV / A	
AC600A	AC 0.600V	
AC100A	AC 100mV	
AC10A	AC 10mV	
AC1A	AC 1mV	
ACA / Bandwidth (Hz)	50 / 60Hz	
FEATURES		
Jaw Opening	Φ30mm	
Output line length	2m (Bourdon tube extension wire)	
Battery	No battery	
Category Ratings	CAT III 300V CAT II 600V	

FR040AD Current Clamp



★ **Current**： **600A**
★ **Power**： **battery/Type-c**
★ **Accuracy**： **1%**
★ **Clamp jaw opening 28mm**

PRODUCT APPLICATION

The FR040AD current clamp can measure circuit AC/DC currents and detect or monitor possible leakage currents without disconnecting or affecting the isolated circuit.Measuring current range wide, with a multimeter or oscilloscope can measure up to 600A current, frequency up to 400Hz.Simple operation, easy to carry.

SPECIFICATIONS

Function	AC-DC current measurement
Power	Internal power supply: 9VDC 6F22 dry battery; external power supply: Type-C USB interface
Measurement method	Hall induction measurement
Measuring bandwidth	400Hz
Working temperature and humidity	0°C~70°C； below 70%Rh
Storage temperature and humidity	-10°C~70°C; <95%RH, No condensation
Measure conductor voltage	<300V DC; ≤240V AC
Output mode	1mV / 1A; 10mV / 1A
Output voltage	2Vpp max
Jaw Opening	Φ28mm
Measurement accuracy	
Direct current	±(1%reading+0.5)
Alternating-current (0 to 60Hz)	±(1%reading+0.5)
Alternating-current (60 to 400Hz)	±(1%reading+1.0)

FR1050 Series Flexible Clamp Current Tester



★Function: Current Test, Leakage Current Test
★Coil Inner Dia.: 0150mm/0300mm
★Current Range: 0mA-10000A
★AC Voltage: 750V
★DC Voltage: 1000V
★Data Storage: 500 groups
★With Backlight Function

PRODUCT INTRODUCTION

FR1050 series flexible current clamp meter is well-designed and manufactured for field test of AC large current and leakage current, with high accuracy, good linearity, and anti-interference ability, it can replace the traditional ordinary clamp meter to measurelarge current and leakage current. , widely used in electricity, communications, meteorology, railways, oil fields, construction, research and teaching units, and other fields. It is especially suitable for places where cables are dense, transformers are connected to the wall for current measurement of subway cores, and tests for thick wire cables are conducted, suitable forcurrent testing of industrial environments such as relay protection, thyristor rectification, variable frequency speed control, semiconductor switching, arc welding,etc.with severely distorted signals.

It adopts advanced Rogowski coil technology and is a toroidal coil uniformly wound on a non-ferromagnetic material, without hysteresis effect and without magnetic saturation phenomenon. High linearity, strong anti-interference ability.

MODEL CONTRAST

Model	FR1050A	FR1050	FR1050E
Coil length	470mm	470mm	950mm
Coil inner diameter	Φ150mm	Φ150mm	Φ300mm
Current range	0A-10000A	0mA-10000A	0mA-10000A
Current resolution	0.1A	1mA	1mA

TECHNICAL PARAMETERS

Function	Current test, leakage current test, DC voltage test, AC voltage test		
Current accuracy	Accuracy ±2%±5dgt (The wire is at the center of the flexible coil , 23℃±2℃)		
AC Voltage Range	0.0V~750VAC	resolution :0.1V	accuracy : ±1.5%rdg+3dgt
DC Voltage Range	0.0V~1000VDC	resolution :0.1V	accuracy : ± 1.5%rdg+5dgt
Sampling rate	2times/sec		
Power	DC4.5V 7# alkaline battery (1.5V AAA×3)		
Backlight	Have		
Test method	Flexibility CT		
Instrument size	Host size : W/T/H: 15110035mm (not including coil)		
LCD size	45mm*28mm		
Coil thickness	Φ8mm(Suitable for narrow environments and cable-intensive places)		
Instrument total weight	220g (φ150mm caliber, including battery)		
Overflow display	Over-range overflow function : "OL"symbol display		
Data storage	500 groups , "FULL"symbol display means the storage is full		
Battery voltage	The battery voltage is 4 grids. When the battery symbol is empty, the battery is less than 3.15V.		
Insulation resistance	Larger than 100M (1kV)		
Working temperature and humidity	-10°C~40°C below 70%rh		
Storage temperature and humidity	-10°C~60°C below 80%rh		
	IEC1010-1、IEC1010-2-032、pollution grade 2、CAT III (600V) IEC61326(EMC standard)		
	IP45		

FR2000+ Series Clamp Ground Resistance Tester



★ Resistance Range: 0-1200Ω
★ Current Range: 0-20A
★ New black screen design, luxury
★ Ω + A same screen display
★ Quick self-test function without waiting
★ Using fast filtering technology, strong anti-interference ability
★ New design, long life clamp head
★ 300 sets of storage

PRODUCT INTRODUCTION

FR2000+ clamp ground resistance tester is a new generation of groundless pile measurement method. It uses a brand new generation of LCD, black screen backlight display and microprocessor technology to measure the grounding resistance through inductive method. When measuring a grounded system with a loop, it is not necessary to disconnect the grounding wire, and no need for auxiliary electrodes.

It uses a fast filtering technique to minimize interference. At the same time store 300 groups of data.

MODEL CONTRAST

Model	FR2000A+	FR2000+	FR2000B+	FR2000C+
Resistance range	0.01Ω-200Ω	0.01Ω-500Ω	0.01Ω-1200Ω	0.01Ω-1200Ω
Class type	Utility-type	Basic type	Explosion proof type	Explosion proof type
Resistance resolution	0.001Ω	0.001Ω	0.001Ω	0.001Ω
Current range	-	-	-	0.00mA~20A
Current resolution	-	-	-	0.01mA

TECHNICAL PARAMETERS

Function	Ground resistant test, Loop resistance test, *leakage current test
Power Supply	4 section AA alkaline dry battery
Measurement Method	Mutual induction
Clamp Diameter	55mm×32mm
*Ω+A Synchronized display	Ω+A same screen display
Display Mode	4-digit LCD display, black screen design
LCD Dimension	46mm×29mm
Meter Dimension	W/T/H: 85mm×58mm×285mm
Sampling Speed	About 2 times/second
Data Review	"MR" symbol indication when reviewing data
Overflow Display	Exceed measurement range overflow function: "OL" symbol display
Interference Test	Automatic identify interference signal,"NOISE"symbol indication when the interference current is large
Alarm Function	Alarm when the measured value exceeds the alarm setting value
Battery Voltage	Real-time display of battery power, reminding timely change when battery voltage is low
Automatic shut-down	"APO" instruction, automatic shutdown after 5 minutes boot
Power Consumption	50mA Max
Weight	Instrument: 1180g (with battery)
Production Compliance	IEC61010-1 (CAT III 300V、CAT IV 150V、Pollution Grade 2); IEC61010-031; IEC61557-1
IP	IP45

*The instrument with current function has this function.

FR2050 Series Flexible Clamp Power Meter



★ **Function: Three-phase AC voltage, leakage current, current, active power, reactive power, apparent power, total power, electric energy, phase sequence,etc.**
Inner diameter of coil: Φ150mm / Φ300mm
★ **AC voltage:0.00V~600V**
★ **AC current: 0.0A~3000A**
★ **Phase angle: 0.0~360.0°**
★ **Power factor: 0.000~1.000**
★ **Active power: 0.00W~1800kW**
★ **Electric energy range: 0.0000~180000kWh**

PRODUCT INTRODUCTION

FR2050 is a multi-function digital smart meters that specially developed for measuring three-phase AC voltage, current, leakage current, phase between voltage, phase, phase sequence, electric energy, total power, etc.It can replace bulky clamp-type leakage current meter and micropower clamp meter function, can also be used to identify current groups, inductive, capacitive circuits, read the phase relationship between the CTs of the differential protection groups, check the correctness of the wiring of the watt-hourmeter, and repair the line equipment, etc.

MODEL CONTRAST

Model	FR2050	FR2050E
Coil length	470mm	950mm
Coil inner diameter	Φ150mm	Φ300mm

TECHNICAL PARAMETERS

Function	Three-phase AC voltage, leakage current, current, active power, reactive power, apparent power, total power, phase of current and voltage, phase between voltage, frequency, energy, phase sequence, etc.	
Current range	AC 0.0A ~ 3000A	Resolution : 0.1A
Voltage range	AC 0.00V ~ 600V	Resolution : 0.01V
Phase range	0.0° ~ 360.0°	Resolution : 0.1°
Power factor	0.3 ~ 1.0	Resolution : 0.001
Power range	AC 0.5W ~ 1800kW	Resolution : 0.01W
Electric energy range	0.0000kWh~180000kWh	Resolution : 0.0001kWh
Power	DC4.5V 7# Alkaline battery (1.5V AAA×3)	
Measure mode	Flexible CT, three-phase voltage clip	
Jaw size	Φ150mm / Φ300mm	
Wire position	The measured wire is at the center of the flexible coil	
Data storage	200groups , display "FULL" symbol indicates that storage is full	
Frequency	50Hz/60Hz automatic identification	
Shift	Automatic switching	
Sample rate	About 2 times/second	
Line voltage	AC 600V line measurement	
Display mode	LCD : 128dots×64dots ; Display area : 43mm×29mm	
Instrument size	Host size:W/T/H 15110035mm (without coil)	
Backlight	Have	
Data storage	Data storage function : "HOLD"symbol display	
Automatic shut-down	About 15 minutes after power on, the meter will automatically shut down	
Instrument weight	Instrument : 1kg(with battery and accessories)	
Production Compliance	IEC1010-1、IEC1010-2-032 Pollution Grade 2, CAT III 600V	
IP	IP45	

FR2060 Non-contact Phase Sequence Tester

★ **Function: Phase detection (normal phase, reverse phase), live line inspection, simple electricity inspection, phase loss judgment, circuit breaker search, breakpoint location, and line maintenance**

★ **Test Method: non-contact clipping method**



PRODUCT INTRODUCTION

FR2060 is a major breakthrough in traditional phase sequence detection methods. The traditional phase sequence detection must be to open the three-phase wire terminal, the phase sequence table of the 3 exposed clips or test pins are connected to the exposed three fire lines. FR2060 uses clamp-type non-contact inductive measurement. It does not need to open the wire and touch the high voltage exposed live wire. It can directly detect the phase sequence by sandwiching the three super induction high-insulation clamps to clamp the three-phase live wire insulation sheath. At the same time, the acousto-optic indicates the normal or reverse phase state of the phase sequence of the 3-phase power supply.

TECHNICAL PARAMETERS

Function	Phase detection (normal phase, reverse phase), live line inspection, simple electricity inspection, phase loss judgment, circuit breaker search, breakpoint location, and line maintenance.
Power	9V battery, continuous use time is about 70 hours.
Measure mode	Non-contact clipping method
Wire position	The measured wire is in the center of the jaw
Frequency	50Hz/60Hz Automatic Identification
Live electricity range	AC 70~1000V
Measuring the highest voltage	AC 1000V
Clamp wire size	Outside diameter Φ1.5mm~Φ48mm
Display	【Positive phase】4 phase detector lights are turned on in a clockwise direction ;
	【Reverse phase】4 phase detection lights are turned on counterclockwise;
	【Live electricity】L1, L2, L3 lights in the voltage setting range ;
	【Lack of phase】L1 or L2 or L3 lights are not lit ;
	【Open circuit】L1 or L2 or L3 lights are not lit
Beep	【Positive phase】The instrument emits intermittent short beep ;
	【Reverse phase】The instrument emits a continuous long beep。
Battery check	After the power is turned on, the power indicator is on; the battery is low; the LOW BATTERY lamp is on。
Clamp lead length	0.6m
Instrument size	L 117.6mm×W 81mm×T 25mm
Automatic shut-down	After about 6 minutes of power on, the meter automatically shuts down to reduce battery consumption.
Battery voltage	When the battery voltage drops to about 5.2V, the battery voltage is low symbol to remind to replace the battery
Instrument weight	nstrument : 260g(including battery)
Maximum rated power	300mVA
Production Compliance	EN61010-1: 2001、EN61010-031: 2002、Pollution Grade 2、CAT III (600V)CAT III 600V
IP	IP45

FR3010 Digital Earth Resistance Tester

★ **Function: ground resistance test, ground voltage test, low value resistance test**
★ **Resistance Range: 0.01Ω~3000Ω**
★ **Voltage Range: 0.01V~600V AC**
★ **Measurement method: precision three-wire measurement, simple two-wire measurement**
★ **Data Storage: 500 groups**



PRODUCT INTRODUCTION

FR3010 digital grounding resistance tester, also name the three-wire grounding resistance tester, grounding resistance meter,etc., it is a commonly used meter for measuring grounding resistance. It uses a large LCD gray screen for lighting display andmicroprocessor technology to meet the requirements of two-wire and three-wire test resistance it is a new generation and grounding measurement instrument that replaces traditional rocking table measurements. Suitable for telecommunications, electricity, meteorology,computer rooms, oil fields, power distribution lines, iron tower transmission lines, gas stations, factory grounding networks, lightning rods and so on. Instrument testing is precise, fast, simple, stable and reliable.

TECHNICAL PARAMETERS

Ground resistance range	0.01Ω ~ 30000Ω	Resolution : 0.01Ω	Accuracy : ±1.5%rdg±3dgt
Ground voltage range	0 ~ 600V AC	Resolution : 0.01V	Accuracy : ±1.5%rdg±3dgt
Function	Ground resistance test, ground voltage test, low value resistance test		
Power Supply	1.5V (LR14) Alkaline Battery 6 Section		
Backlight	Controllable gray screen backlight, suitable for use in dim places		
Measurement Mode	Precise three-wire measurement, simple two-wire measurement		
Measurement Method	Grounding resistance: rated current change pole method, 128Hz; Ground voltage: average value rectification ;		
Wire Resistance Check	Avoiding the errors caused by the test line not being fully inserted into the instrument interface or being in poor contact or replaced the extended test line by the user, to make the ground resistance measurement more accurate		
Display mode	4-bit large LCD display, gray screen backlight		
Measure indication	LED flashing indicator during measurement, LCD countdown display		
LCD Dimension	108mm×65mm		
Meter Dimension	L/W/H: 240mm×188mm×85mm		
Test Line Length	3 strips: Red 15m, Yellow 10m, Green 5m each 1 strip		
Simple Test Line	2 strips: yellow 1.5m, green 1.5m each 1 strip		
Auxiliary Grounding Rod	2 roots		
Measure Time	Ground voltage: about 3times/second; Grounding resistance: about 5 times/second		
Line Voltage	Measure ground voltage: below AC 600V		
Data Storage	500 groups, flashing "FULL" symbol indicates that the storage is full		
Data Review	"MR" symbol indication when reviewing data		
Overflow Display	Exceed measurement range overflow function: "OL" symbol display		
Alarm Function	Alarm when the measured value exceeds the alarm setting value		
Battery Voltage	Insufficient battery voltage, showing low battery symbol " "		
Automatic Shutdown	The instrument automatically shuts down after about 15 minutes without operation.		
Power consumption	Standby: 40mA Max(Backlight off), Turn on backlight: 43mA Max, measuring :120mA Max(Backlight off)		
Weight	Instrument: 1230g (including battery) ,test line: 610g (including simple test line)		
Production Compliance	IEC61010-1、IEC1010-2-31、IEC61557-1,5、IEC60529(IP54)、Pollution Grade 2、CAT III 300V		
IP	IP54		

FR3010E Ground Resistance Soil Resistivity Tester

★ **Function: two three four line test ground resistance, soil resistivity, ground voltage**
★ **Resistance Range: 0.00Ω ~ 30.00kΩ**
★ **Soil Resistivity: 0.00Ωm ~ 9999kΩm**
★ **Ground Voltage: 0.00V~600V AC**
★ **Test Frequency: 128Hz**
★ **Data Storage: 500 groups**
★ **Range Automatic Shift**



PRODUCT INTRODUCTION

FR3010E grounded resistance soil resistivity tester, also called the four-wire grounding resistance tester or the soil resistivity tester, is a commonly used instrument for measuring grounding resistance. It used a large-size LCD gray-whitemscreen backlight display and microprocessor technology to pass the micrometer, to use microprocessor control 2-wire, 3-wire, 4-wire to test ground resistance and soil resistivity.

FR3010E has many grounding test functions to quickly and comprehensively measure various parameters in the grounded network. It is a new generation grounding measurement instrument that replaces the traditional rocking able measurement.

It uses fast filtering techniques to minimize interference. Store 5000 sets of data at the same time.

TECHNICAL PARAMETERS

Function	2-wire, 3-wire, 4-wire test ground resistance, soil resistivity, ground voltage		
Range	Ground resistance : 0.00Ω ~ 30.00kΩ	Resolution : 0.01Ω	Accuracy : ±2%rdg±5dgt
	Soil resistivity : 0.00Ωm ~ 9999kΩm	Resolution : 0.01Ωm	Accuracy : ρ=2πaR
	Ground voltage : AC 0.00 ~ 600V	Resolution : 0.01V	Accuracy : ±2%rdg±3dgt
Power Supply	1.5V (LR14) Alkaline Battery 6 Section		
Measurement Mode	Precise four-wire, three-wire measurement, simple two-wire measurement test ground resistance		
Measurement Method	Grounding resistance: rated current change pole method, test current 20mA Max Soil resistivity: quadrupole; Ground voltage: average value rectification(S-ES interface)		
Test Frequency	128HZ		
Short Circuit Test Current	AC ＞20mm		
Open Circuit Test Voltage	AC 30V Max		
Electrode Spacing Range	Can be set to 1m~100m		
Shift	Grounding resistance: 0.00Ω~30.00kΩ automatic shifting; Soil resistivity: 0.00Ωm~9999kΩm automatic shifting		
Backlight	Controllable gray light backlight, suitable to use in dim place		
Display mode	4-bit large LCD display, gray backlight		
Measure indication	LED blinking during measurement		
LCD Display Field	108mm×65mm		
Meter Dimension	L/W/H: 240mm×188mm×85mm		
Standard Test Line	4 strips: Red 15m, Black 15m, Yellow 10m, Green 10m, each 1 strip		
Easy test line	2 strips: Yellow 1.5m, Green 1.5m each 1 strip		
Ground Voltage	Test below AC600V(ground voltage measurement function can't be used to measure commercial power)		
Data Storage	500 groups, "MEM" storage instruction, "FULL" symbol indicates that storage is full		
Overflow Display	Exceed measurement range overflow function: "OL" symbol display		
Alarm Function	Alarm when the measured value exceeds the alarm setting value		
Automatic Shutdown	The instrument automatically shuts down after about 15 minutes without operation.		
Power consumption	Standby: 40mA Max(Backlight off) ,Turn on backlight: 43mA Max ,measuring : 120mA Max(Backlight off)		
Weight	Instrument: 1280g (including battery),test line: 890g (including simple test line)		
Production Compliance	IEC61010-1, CAT III 300V, CAT IV 150V, IEC61010-031, IEC61557-1, IEC61557-5, JJG 366-2004, Pollution Grade 2		
IP	IP45		

FR3015 Insulation Resistance Tester

★ **Function: Insulation resistance test, voltage test**

★ **Rated voltage: 100 ~ 2500V**

★ **Insulation resistance: 100GΩ MAX**

★ **Insulation resistance resolution rate: 0.01MΩ**

★ **voltage range: 0 ~ 1000V**

★ **voltage resolution: 0.1V**

★ **With 500 sets of data storage functions**



PRODUCT INTRODUCTION

FR3015 Digital insulation resistance table is also known as high-voltage insulation resistance tester for testing for insulation resistance.This instrument has the functions of LCD large-screen gray backlight display, data storage, data inspection, alarm, automatic shutdown and other functions. At the same time, it also has the function of measured DC voltage AC voltage absorption ratio and polarization index. The whole machine is beautiful and high-end, the range is wide, the resolution is high, the operation isconvenient, the carry is convenient, the accurate, reliable, and stable performance, and strong anti-interference ability.

FR3015 also has a shock-proof, dustproof, moisture-proof structure, and adapts to the harsh working environment. It is an indispensable instrument that is commonly used by industrial enterprise departments that electricity, posts and appliances, communications, electromechanical installation and maintenance, and use power as industrial power or energy. It is suitable for measuring the resistance value of various insulating materials and insulation resistances of transformers, motors, cables and electrical equipment.

The FR3015 digital insulation resistance table consists of a medium and large-scale integrated circuit. This table has a large output power and a large output voltage level (up to 5 voltage levels). The rated insulation test voltage range is 100 to 2500V, and the measured resistance measurement range is 0.01MΩ to 100GΩ. The DC voltage measurement range is 1000V, and the AC voltage measurement range is 750V.

MODEL CONTRAST

Model	FR3015	FR3015E
Rated voltage	100 ~ 1000V	250 ~ 2500V
Insulation resistance	0.6MΩ ~ 50GΩ	0.10MΩ ~ 100GΩ

TECHNICAL PARAMETERS

Function	Insulation resistance test, voltage test	
Base condition	23 ℃ ± 5℃, below 75%RH	
Rated voltage (V)	100 ~ 2500V	
Measuring voltage	The rated voltage × (1 ± 10%)	
Insulation resistance range	100GΩ MAX	Resolution : 0.01MΩ
Insulation resistance resolution	0 ~ 1000V	Resolution : 0.1V
AC voltage range	0~750V	Resolution : 0.1V
Output short -circuit current	≥1.5mA(1000V)	
A absorption ratio and polarization index measurement	Yes	
Power supply	1.5V (AA) alkaline battery 8 section	
Backlight	Controlled gray-white screen backlight, suitable for dark fields	
Display mode	4 large LCD display, gray and white screen backlight	
LCD display size	73mm × 43mm	
Meter size	175mm (long) × 112mm (width) × 53mm (height)	
Test line	High-pressure test line red 1 meter, black 1 meter, green line 1 meter	
Data storage	500 groups, flashing display "FULL" symbol indicates that the storage is full	
Data review	Data viewing function: "MEM" symbol display	
Overflow	Extraction overflow function: "ol" symbol display	
Alarm function	When the measurement value exceeds the alarm setting value	
Power consumption	Standby: 18mA MAX (Backlight shutdown)	Putting on the backlight: 43mA MAX
	Measurement: 326mA Max (Backlight shutdown)	
Quality	1230g (including battery)	
Production Compliance	IEC61010-1, IEC61010-2-31, IEC61557-1,5, IEC60529 (IP54), pollution, etc. 2. CAT III 600V	
IP	IP54	

FR3025 Series Insulation Resistance Tester

★ Function : insulation resistance test , voltage test
★ Rated Voltage(V) : 250; 500 ; 1000 ; 2500; 5000
★ Insulation Resistance Range : 0.01MΩ~200GΩ
★ DC Voltage Range : 0 ~ 1000V
★ AC Voltage Range : 0 ~ 750V
★ Data Storage : 500 groups



PRODUCT INTRODUCTION

FR3025 digital insulation resistance meter, also name megohmmeter, high voltage insulation resistance tester, is used for insulation resistance test. This instrument has a large LCD screen gray backlit display, data storage, data review, alarm, automaticshutdown and other functions. At the same time, it also has the function of measuring absorption ratio and polarization index of AC voltage and DC voltage. The machine is beautiful and upscale, has a wide range, high resolution, convenient operation, easy to carry, accurate, reliable, stable performance, strong anti-interference ability.

FR3025 also has a shockproof, dustproof, moisture-proof structure, and adapts to the harsh working environment. It is a commonly used and indispensable instrument for electric power, post and telecommunications, communications, and industrial enterprises that use electricity as industrial power or energy. It is suitable for measuring the resistance value of various insulating materials and the nsulation resistance of transformers, motors, cables and electrical equipment.

MODEL CONTRAST

Model	FR3025 (2500V)	FR3025E (5000V)
Rated voltage(V)	100 : 250 : 500 : 1000 : 2500	250 ; 500 ; 1000 ; 2500 ; 5000
Insulation resistance range	0.01MΩ ~ 200GΩ	0.01MΩ ~ 200GΩ
Resolution	0.01MΩ	0.01MΩ
Accuracy	±3%rdg±5dgt	±3%rdg±5dgt
Output short-circuit current	≥2mA(2500V)	≥2mA(5000V)
DAR & PI	Have	Have

TECHNICAL PARAMETERS

Function	Insulation resistance test, voltage test
Test voltage(V)	Rated voltage x (1±10%)
Voltage range	DC: 0 ~ 1000V , resolution : 0.1V; AC:0 ~ 750V , resolution : 0.1V
Power	1.5V (LR14) Alkaline Battery 6 Section
Backlight	Controllable gray screen backlight, suitable to use in dim place
Display mode	4-bit large LCD display, gray screen backlight
LCD Display Size	108mm×65mm
Meter Dimension	L/W/H: 240mm×188mm×85mm
Test Line	High voltage test line red 1 meter, black 1 meter, green line 1 meter
Data Storage	500 groups, "FULL" symbol indicates that storage is full
Alarm Function	Alarm when the measured value exceeds the alarm setting value
Power Consumption	Standby: 40mA Max(backlight off), turn on backlight: 43mA Max, measure :80mA Max (backlight off)
Weight	1230g (including battery)
Automatic shut-down	Automatic shutdown after 15 minutes boot
Insulation Resistance	≥50MΩ (1000V)
Production Compliance	IEC61010-1 (CAT III 300V、CAT IV 150V、Pollution Grade 2)
IP	IP54

FR3060 Series DC Low Resistance Tester

★ **Function: metal connection, wire resistance, transformer motor coil resistance, flange contact resistance and other low resistance, contact resistance test**
★ **DC resistance range: 0.001mΩ~300.0kΩ**
★ **Detection method: four-wire test**
★ **Resolution: 1uΩ**
★ **Test current: ≥1A**
★ **With large capacity rechargeable battery**
★ **Port anti-burn, continuous uninterrupted test, high test efficiency**



PRODUCT INTRODUCTION

FR3060 DC low resistance tester also known as micro-ohmmeter, ohmmeter, DC grounding resistance tester, using the microprocessor technology, four-wire test, safety, precision and reliability. It is the instrument that detects the equipotential bonding quality of metal components such as metal riveting resistors of vehicles, ships and aircrafts, equipment housings, lightning protection belts, ground beams, structures, cabinets, steel bars, water pipes, windows, guardrails, radiators, and assembly lines. It is also possible to measure the resistance of the connecting conductor between the various electrical equipment and the grounding grid, the DC resistance of the transformer. It can also measure the contact resistance of switches and socket contacts, the low value resistance of coils, metal wires, solder joints, etc. It also has the function of measuring DCvoltage and AC voltage.

The monitoring software has on-line real-time monitoring and historical query functions, dynamic display, alarm value setting and alarm indication function, and functions such as reading, reviewing, saving, reporting and printing of historical data.

MODEL CONTRAST

Model	FR3060A	FR3060
Resistance range	0.01mΩ ~ 30.00kΩ	0.001mΩ ~ 300.0kΩ
Resolution	10uΩ	1uΩ
Data storage	500 groups	500 groups
USB connect computer	No	Have
Rechargeable function	Have	Have

TECHNICAL PARAMETERS

Function	Mainly used to measure the wire resistance of the cable, the contact resistance of the switch, the connector, the relay, the resistance of the coil, the motor, the transformer winding, the metal riveting resistance, the connection resistance test between the metal components, the low value resistance test, the ground floor ground Resistance test of connecting conductor, contact resistance test, etc.		
Total DC resistance range	FR3060: 0.001mΩ ~ 300.0kΩ	resolution : 0.001mΩ	accuracy : ±(1%FS
	FR3060A: 0.01mΩ ~ 30.00kΩ	resolution : 0.01mΩ	accuracy : ±(1%FS
Test method	Four-wire test		
Short circuit test current	≥1A		
Open circuit voltage	≤4.2V		
Over load protection	Have		
Capacity factor	Measure capacity factor≤8W		
Power	DC 3.7V 2500mAh Large-capacity lithium battery		
Display mode	LCD display, gray screen backlight		
Instrument size	L/W/H : 187 mm*119 mm*50mm		
Test line length	About 60cm , red、black each 1		
Measurement time	About 2 times/sec		
USB interface	With micro USB interface		
Data storage	500 groups, "MEM" storage instructions, display "FULL" symbol indicates that the storage is full		
Automatic shut-down	The instrument automatically shuts down after about 15 minutes without operation.		
Production Compliance	IEC61010-1、CAT III 600V、Pollution Grade 2、JJG724-1991、JJG166-1993、DL/T967-2005		
IP	IP54		

FR7030 Series Water leakage detector

- ★ **Professional Acoustic Analysis Architecture with advanced filtering system for fast, precise leak detection**
- ★ **Fast and accurate leak detection, adjustable volume and frequency, visual dial and digital display , high-fidelity sound reproduction**
- ★ **Detection mode: Three detection modes: indoor mode, outdoor mode, and all-through mode.**
- ★ **High-sensitivity probe: accurately detects micro-leakage, waterproof and drop-proof.**
- ★ **Frequency range: 20Hz ~ 8000Hz**
- ★ **Signal capture algorithm: Effectively identifies weak sound waves, enabling accurate detection of minute leaks.**
- ★ **Sensitivity: Up to 98dB, 80,000x amplification**
- ★ **High-fidelity audio restoration: Reduces signal distortion, lowers the probability of missed or false detections, and improves the reliability of detection results.**



PRODUCT INTRODUCTION

The FR7030 series multi-functional intelligent leak detector (also known as: leak detector , multi-functional leak detector, intelligent leak detector) is a professional acoustic leak detector designed for residential and commercial pipe networks, building properties, and engineering pipelines.

Leakage detection equipment. Built with high-sensitivity sensors and professional acoustic analysis technology, it can help leak detection technicians, maintenance engineers, and pipeline operators accurately identify and locate various pipeline leaks.

The device boasts core capabilities such as high-fidelity sound reproduction, three detection modes, 29 adjustable volume levels, and high-performance filtering. It features a lightweight design, simple operation, and a dual display interface combining a visual dial and digital display.

It can display the volume of the leak sound in real time and accurately, making the detection signal intuitive and significantly improving on-site detection efficiency. It is suitable for the entire process of leak detection, from rapid troubleshooting to precise location.

MODELCONTRAST

Model	FR7030	FR7030E
Mode	Indoor Mode, All-Pass Mode	Indoor Mode, Outdoor Mode, All-Pass Mode

TECHNICAL PARAMETERS

Functions	Fast and precise leak detection with adjustable volume and frequency, visual dial and digital display, and high-fidelity sound reproduction. Optimized circuit design and shielding structure at the hardware level effectively filter out environmental noise, focus on the core acoustic signal of leaks, and reduce interference from irrelevant sounds, making leak signals clearer and easier to interpret.
Power supply	7.2V/5000mAh Rechargeable lithium battery, capable of continuous operation for approximately 10 hours at full charge and normal brightness levels.
Frequency range	20Hz ~ 8000Hz
Frequency Level	17-level adjustable
Filter Method	Hardware filtering + Digital filtering
Volume Adjustment	29-level adjustable
Screen Brightness Adjustment	3-level adjustable, Low brightness, medium brightness, high brightness

TECHNICAL PARAMETERS

Detection Mode	Three detection modes: Indoor, Outdoor, and All-Pass.
Display Mode	7-inch full-color LCD display. Screen dimensions: 168mm × 112mm; active display area: 155mm × 75mm.
Instrument Size	235mm×145mm×39mm
Sensitivity	Up to 98dB, approx. 80,000× gain
Data Format	Analog & Digital Dual Display
Human-computer interaction	Physical Buttons, Rotary Knob, and Touchscreen Control
Display Update Cycle	Real-time display
Signal Input Interface	Aviation socket
Pass feel instrument	Indoor sensors, Outdoor sensors (FR7030 Indoor sensors)
Automatic shutdown	3The instrument panel will automatically shut down when the battery is low
Language selection	Chinese mode, English mode
Charging port	Type-C charging port (supports fast charging)
Operating temperature and humidity	-20°C~50°C; ≤85% RH
Storage temperature and humidity	-10°C~50°C; ≤75% RH
Instrument quality	0.655kg (including main unit and battery)
Suitable for safety regulations	IEC61010
IP	IP45

FR9032 Leakage Switch Tester

- ★ **AC voltage range: 0V ~750V**
- ★ **DC voltage range: 0V~1000V**
- ★ **Test mode: Manual (Mt)or Automatic (At)**
- ★ **Power supply: 1.5V (AA)alkaline batteries 8 pieces**
- ★ **4-digit super large LCD display, gray and whitescreen backlight**



PRODUCT INTRODUCTION

FR9032 leakage switch tester,also known as leakage switch tester,leakage protector tester， residual current action protector tester, residual current action protector tester, is an essential testing instrument for engineering quality supervision stations and construction companies.The operating time and operating current of the leakage switch can be measured. It is mainly used to test the leakage action current, leakage non-operation current and leakage action time of the leakage protector.It can be widely used in power supply departments, agricultural power departments,leakage protector manufacturers,labor safety inspection departments in construction, mining, machine tool and other industries, as well as electricians .

FR9032 Leakage switch tester, composed of host, test line, etc. Simple and portable, 4-digit super large LCD display, gray and whit screen display, easy to operate and easy to use. Large-capacity storage of 500 sets of data, voltage measurement range: 1000 V, measurement accuracy: ± 5%rdg ± 5 dgt. The test leakage current is from 15 to 500mA, which is divided into ten gears (15; 30; 50; 75; 100; 150; 200; 250; 300; 500mA), and the test leakage current action time range is 0 to 999ms.

TECHNICAL PARAMETERS

Function	Leakage protector action time measurement, leakage protector action current measurement, voltage measurement.		
AC voltage range	0V ~ 750V	Accuracy: ±5% rdg ±5d gt	Resolution: 0.1V
DC voltage range	0V ~ 1000V	Accuracy: ±5% rdg ±5d gt	Resolution: 0.1V
Current gear	15; 30; 50; 75; 100; 150; 200; 250; 300; 500 m	Accuracy: ±10% rdg ±15d gt	Resolution: 1mA
Test mode	Manual (t) or Automatic (At) M		
Power supply	1.5V (AA) alkaline batteries 8 pieces		
Backlight	controllable gray and white screen backlight, suitable for use in dark places		
Display mode	4-digit super large LCD display, gray and white screen backlight		
LCD display size	73 mm × 43 mm		
Meter size	175 mm (L) × 112 mm (W) × 53 mm (H)		
Test line	Test line red 1 meter, black 1 meter		
Data storage	500 groups, flashing "FULL" symbol means storage is full		
Data review	Data query function: "MEM" symbol display		
Battery voltage	The battery voltage is insufficient, and the low battery symbol is displayed		
Power consumption	standby: 53 mA Max (backlight off)		
	power on backlight: 75 mA Max		
	Measurement: 108 mA Max (with backlight on)		
Quality	1230 g (including battery)		
Operating Temperature and Humidity	-10 °C ~ +50°C < 85% RH		
Storage Temperature and Humidity	-15°C ~ +55°C < 90% RH		
Production Compliance	IEC61010-1 CAT III 600V, IEC61010-031, IEC61326, pollution degree 2		
IP	IP45		

FR90 Multifunction Non-Contact Induction Test Pen

★ **Voltage detection range: 12V~ 1000V AC**
★ **Frequency: 50Hz/60Hz**
★ **Alarm mode: sound and light alarm**
★ **Automatic detection of electric field close to the measured point**
★ **White LED lighting**



PRODUCT INTRODUCTION

FR90 multi-functional non-contact induction test pen is widely used in the fields of electronic electrician and so on. The electric pen meter is easy to operate, safe and efficient, and bids farewell to the traditional contact method of electricity measurement. Equipped with high-performance processing chips, high-sensitivity sensing probes, intelligent zero-fire wire identification for partitions, breakpoint detection, insulation operation, safe zero contact, and easier inspection and maintenance of home improvement lines. The whole machine is beautiful and high-grade, anti-fall and durable, convenient to operate, easy to carry, stable in performance and strong in anti-interference ability. Moreover, it has a shockproof, dustproof, and moisture-proof structure, and is the preferred electrical measurement tool for electronic electricians.

TECHNICAL PARAMETERS

Function	Intelligent identification of neutral and live wires, line breakpoint detection, non-contact voltage detection, lighting flashlight, sound and light alarm, low voltage prompt, automatic shutdown
Voltage detection range	12V~1000V AC
Frequency	50Hz/60Hz
Alarm method	Sound and light alarm
Automatic Identification	Automatic detection of electric field close to the measured point
Zero fire line judgment	Judging by the signal strength, the strong signal is the live line, and the weak signal is the neutral line.
Line break detection	Line breakpoints under live conditions, quickly identify the live end and the uncharged end
Signal strength indicator	The buzzing sound changes from slow to fast; the indicator light flashes from slow to fast
Flashlight	White LED lighting
Low voltage reminder	When the battery voltage is lower than 2.4V, the power light flashes and the buzzer prompts
Automatic shut-down	If there is no operation within 5 minutes, it will automatically shut down if no voltage signal is detected
1 meter drop test	Made of high-quality materials, durable and drop-proof, shock-proof and shake-proof
Working temperature and humidity	-20°C~40°C;over80%rh
Storage temperature	-20°C~50°C;below 70%rh
Power supply	2*1.5V AAA batteries
Weight	About 32g (without battery)
Size	158mmx28mmx23mm
Production Compliance	CAT III 1000V CAT IV 600V
IP	IP54

ES1000 H/L Voltage Clamp Current Tester

- ★ **Function: high voltage current online test,transformer current Test, high voltage line current Test**
- ★ **Range: 0.0mA-1200A(50/60Hz auto)**
- ★ **Resolution: 0.1mA**
- ★ **Jaw Size: Φ50mm**
- ★ **Insulation Rods: five section insulation rods(total 5 meters)**
- ★ **Line Test: can be used below 60kV lines**



PRODUCT INTRODUCTION

ES1000 high-low voltage ampere meter is a high-pressure measurement tool. It is composed of a special clamp ammeter with high voltage insulation rod. Inside the clamp ammeter, a mask integrated circuit is used, and an insulating rod is used to measure the current of a high voltage line with insulation sheath below 60 kV or bare wire below 35 kV. When not using the insulation rod, it can also be used as a high-precision low-voltage clamp ammeter, leakage current meter, can accurately split out the current or leakage current of 0.1mA. It uses high-precision CT technology to ensure high-precision, high-reliability, and high-stability for years of uninterrupted testing. High-voltage clamp current meter also has a peak hold, data retention, data storage and other functions.

TECHNICAL PARAMETERS

Range	0.0mA-1200A (50/60HzAuto)
Resolution	0.1mA
Clamp Diameter	φ50mm
Accuracy	±2%rdg±5dgt
Sampling Speed	2 times/second
Function	High-low voltage current measurement
Power Supply	DC6V Alkaline Dry Battery (1.5V AAA X 4)
Test Method	Clamp CT
Meter Dimension	Host Dimension : W/T/H 87*37*262mm
LCD Dimension	48mm×31mm
Total Weight	2.5Kg(including insulation rod and battery)
Overflow Display	Exceed measurement range overflow function : "OL"symbol display
Data Storage	99 groups
Data Storage Full	Data full function : "FULL"symbol display
Battery Voltage	When the battery voltage is below 5.2V, the symbol of battery voltage is low will show
Insulated Rod	5 sections insulation rods (total 5 meters)
Insulation strength	AC 60kV/rms
Circuit Test	Insulation sheath wire test below 60kV line voltage, bare wire test under 35kV(with insulation rod operation)
Work Temperature	-10°C ~ 40°C
Storage Temperature	-10°C ~ 60°C
Humidity	0°C ~ 31°C≦ 75% , 31°C ~ 40°C≦ 50%
Suitable for safety regulations	IEC1010-1,IEC1010-2-032, Pollution Level2, CAT I (600V) IEC61326(EMC Standard)
IP	IP45

ES1001 Wireless H/L Voltage Clamp Current Tester

★ **Function: high voltage current online test, transformer current test, high voltage line current test**
★ **Range: 0.0mA-1200A (50/60Hz auto)**
★ **Resolution: 0.1mA**
★ **Jaw Size: Φ50mm**
★ **Insulation Rods: five sections insulation rods(total 5 meters)**
★ **Line Test: can be used below 60kV lines**
★ **Wireless Distance 30 meters**



PRODUCT INTRODUCTION

ES1001 high-low voltage ampere meter is a high-pressure measurement tool. It is composed of a special clamp ammeter with high voltage insulation rod. Inside the clamp ammeter, a mask integrated circuit is used, and an insulating rod is used to measure the current of a high voltage line with insulation sheath below 60 kV or bare wire below 35 kV. When not using the insulation rod, it can also be used as a high-precision low-voltage clamp ammeter, leakage current meter, can accurately split out the current or leakage current of 0.1mA.It is easy to use and carry. Equipped with telescopic insulation rod, it is easy to carry and use. It wireless transmission test data, equipped with a wireless receiver, can receive measured data within 30 meters of a straight line, to ensure high-precision, high-reliability, and high-stability for years of uninterrupted testing.It also has a peak hold, data retention, data storage, wireless transmission data and other functions.

TECHNICAL PARAMETERS

Range	0.0mA-1200A (50/60Hz auto)
Resolution	0.1mA
Clamp Diameter	φ50mm
Accuracy	±2%rdg±5dgt
Sampling Speed	2 times/second
Wireless Distance	30m
Function	High-low voltage current measurement
Power Supply	Hosts : DC6V 7Alkaline Dry Battery (1.5V AAA×4) ; Receiver : DC7.5V 5Alkaline Dry Battery (1.5V LR6×5)
Test Method	Clamp CT
Meter Dimension	Hosts :W/T/H 87*37*262mm Receiver :W/T/H :100*35*204mm
LCD Dimension	Receiver LCD display : 62mm*44mm
Total Weight	2.9 kg (including insulation rod and battery)
Overflow Display	Exceed measurement range overflow function: : "OL"symbol display
Data Storage	200 Groups
Data Storage Full	Data full function : "FULL"symbol display
Battery Voltage	Detector: when the battery voltage is below 5.2V, the symbol of low power will show to remind to replace battery. Receiver: when the battery voltage is below 5.2V, the symbol of low power will show
Insulated Rod	5 sections insulated rod (total 5m)
Insulation Strength	AC 60kV/rms
Circuit Test	Insulation sheath wire test below 60kV line voltage, bare wire test under 35kV (with insulation rod operation)
Work Temperature	-10°C ~ 40°C
Storage Temperature	-10°C ~ 60°C
Humidity	0°C ~31°C ≤75% , 31°C ~40°C ≤50%
Production Compliance	IEC1010-1、ICE1010-2-032、Pollution Level 2、CAT III(600V) IEC61326(EMC Standard)
IP	IP45

ES1010 Wireless H/L Voltage Current Ratio Tester

★ **Function: high-low voltage current transformer primary and secondary loop current, transformation ratio, polarity, phase, and on-line test**
★ **High voltage range: 0.0mA-1200A**
★ **Low voltage range: 0.0mA-20A**
★ **High voltage clamp jaw: φ50mm**
★ **Low voltage clamp jaw: φ7.5mm**
★ **Shift gear: automatic shift**
★ **Line voltage: below 60kV**



PRODUCT INTRODUCTION

ES1010 wireless high and low voltage ratio tester is also called high and low voltage CT wireless ratio tester. It is composed of high voltage detector, low voltage current clamp, main engine, high voltage insulation rod, monitoring software and communication line. The instrument adopts fast digital circuit processing technology. In the case of not disconnecting the line at the scene and uninterrupted power, connecting insulating rods to measure high voltage current transformers up to 60kV, primary/of transformers, high-voltage primary currents, low-voltage secondary currents, and can calculate the ratio of transformers, polarity, and ratio error. Insulation rods have characteristics of light weight, moisture resistance, high temperature resistance, impact resistance, bending resistance, high insulation, etc.

TECHNICAL PARAMETERS

Tester	High voltage detector	Host (current clamp)
Range	0.0mA ~ 1200A (50/60Hz automatic) |	0.0mA ~ 20A
Resolution	0.1mA	0.1mA
Clamp Diameter	φ50mm	φ7.5mm
Test Accuracy	±2%±5dgt	±0.5%±5dgt
Sampling Speed	2 times/second	
Function	High-low voltage current transformer primary and secondary loop current, transformation ratio, polarity, phase, and on-line test; current and voltage ratio on both sides of transformer; on-line test; load current test	
Transmission type	Wireless transmission, straight line transmission distance 30m	
Shift gear	Automatic shift	
Power	DC6V 7# Alkaline battery (1.5V AAA×4)	DC7.5V 5 # Alkaline battery (1.5V LR6×5)
Test mode	Clamp CT	
Meter Dimension	W/T/H: 87*37*262mm	Host: W/T/H:100*35*204mm Current clamp: W/T/H: 42*20*137mm
Display mode	LCD : 128dots×64dots Blue screen backlight function, suitable for dark places	
Ratio	Three kinds of transformation ratio display: (The primary and secondary circuit actually measured the current transformation ratio; the conversion ratio of the secondary circuit 5A; 10kV-YY transformer conversion ratio of 10kV/380V), the maximum ratio of 1:10 million	
Line voltage	Line test with insulation sheath below 60kV or bare wire current test below 35kV (must operate with insulation rod)	
Lead wire length	The lead wire of the current clamp 2 meter	
Weight	Total weight of instrument : 3.1kg (including insulation rob and instrument bag), High voltage detector : 370g (including battery), Host : 409g (including battery), Current clamp : 180g	
Data interface	USB transmission	
No signal instruction	"NO SIGNAL ----" is displayed when the host does not receive the transmission signal	
Insulated rod	Five section insulation rods (5 meters in total)	
Insulation strength	AC 60kV/rms	
Line test	Line test with insulation sheath below 60kV or bare wire current test below 35kV (operate with insulation rod)	
Production Compliance	IEC1010-1、IEC1010-2-032、Pollution Grade 2、CAT III (600V) IEC61326 (EMC Standard)	
IP	IP45	

ES2010+ Double Clamp Phase VA Meter

★ **Voltage Range : AC 0.00V~600V**
★ **Current Range : AC 0.0mA~20.0A**
★ **Phase Range : 0.0°~360.0°**
★ **Frequency Range : 45.00Hz~65.00Hz**
★ **Range Manual Shift**
★ **Equipped with a large capacity battery with charging function**



PRODUCT INTRODUCTION

ES2010+ double clamp digital phase voltmeter, is a high-quality, multi-functional, high-precision, portable electrical measuring instrument designed for on-site measurement of voltage, current, frequency, and phase. Widely used in electrical energy measurement, electricity inspection, power inspection, power meter and relay protection, differential protection, excitation test, industrial, mining enterprises and other departments.

It also can judge the inductive current and capacitive circuit, check the transformer wiring group. Circuit ideal instrument for checking the use of power and performing secondary circuit inspection.

TECHNICAL PARAMETERS

Function	Measure three-phase AC voltage, current, voltage phase, current phase, voltage and current phase, frequency, judging the transformer wiring group, inductive, capacitive circuit, test secondary circuit and busbar protection system, read out the phase relationship between the CTs of the differential protection groups, check the correctness of the wiring of the watt-hour meter, repair the line equipment, etc.		
Power	DC3.65V lithium battery		
Power consumption	Turn on the backlight and consume up to 30mA. The battery can work continuously for more than 12 hours.		
Display mode	LCD display, 72×55mm		
Instrument size	W/L/T : 18711948mm		
Jaw size	Φ8mm		
Voltage range	AC 0.00V~ 600V	Resolution : 0.01V	Accuracy : ±0.5% FS
Current range	AC 0.0mA~20.0A	Resolution : 0.1mA	Accuracy : ±0.5% FS
Phase range	0.0° ~ 360.0°	Resolution : 0.1°	Accuracy : ±1°
Frequency range	45.00HZ~65.00HZ	Resolution : 0.01HZ	Accuracy : ±0.5HZ
Detection rate	About 2 second/time		
Data hold	Press HOLD key to hold data during test, "H" symbol display		
Automatic shut-down	About 15 minutes after power on, the meter will automatically shut dow		
Backlight function	Have , Suitable for dark places and night use		
Voltage detection	When the battery voltage is lower than 3.2V, the battery voltage is low symbol display		
Instrument weight	Host : 362g(including battery),Tip-shaped current clamp : 180g*2,Test line : 190g		
Voltage test line length	1.5m		
Current clamp line length	1.2m		
Silicone protective cover	Have		
Input impedence	Test voltage input impedance is : 1MΩ		
Pressure resistance	The withstand voltage of 1000V/50Hz sine wave AC voltage between the instrument circuit and the housing lasts 1 minute		
Insulation	Between instrument line and housing>100MO		
Production Compliance	IEC61010-1 CAT III 600V, IEC61010-031, IEC61326, Pollution Grade 2		
IP	IP45		

ES2010E+ Smart Double Clamp Phase VAmeter

★ **Voltage Range : AC 0.00V~600V**
★ **Current Range : AC 0.0mA~20.0A**
★ **Phase Range : 0.0°~360.0°**
★ **Frequency Range: 45.00Hz~65.00Hz**
★ **Active Power Range : 0.0W~12kW**
★ **Reactive Power Range : 0.0var~12kvar**
★ **Apparent Power Range : 0.0VA~12kVA**
★ **Power Factor Range : -1~+1**
★ **Range Automatic Shift**
★ **Color LCD Display**
★ **With USB Interface**



PRODUCT INTRODUCTION

ES2010E+ Smart double clamp phase voltmeter, is a high-quality, multi-functional, high-precision, intelligent, portable handheld measuring instrument designed for on-site measurement of voltage, current, power, power factor, frequency, and phase. Widely used in energy metering, electricity inspection, power inspection, power meter and relay protection, differential detection, start-up test, industrial and mining enterprises, scientific research institutions and other departments.It also has other measurement judgment functions,judge the inductive current and capacitive circuit, check the transformer wiring group, check whether the power meter is wired correctly. It is the ideal instrument for checking the use of power and performing secondary circuit inspection.ES2010E+ Smart double clamp phase voltmeter is composed of a host, current clamp, and test line, and stores 5000 sets of data at the same time, and has a data static storage function.With historical data read, consult, save, report, print and other functions.

TECHNICAL PARAMETERS

Function	Measure two-phase AC voltage, current, voltage phase, current phase, voltage and current phase, frequency, phase sequence, active power, reactive power, apparent power, power factor, judging the transformer wiring group, inductive, capacitive circuit, test secondary circuit and busbar protection system, read out the phase relationship between the CTs of the differential protection groups, check the correctness of the wiring of the watt-hour meter, repair the line equipment, etc.		
Power	3.65Vlithium battery		
Display mode	Color LCD display , 72*55mm		
Instrument size	L/W/T : 187*119*48mm		
Jaw size	Φ8mm		
Voltage range	AC 0.00V ~ 600V	Resolution : 0.01V	Accuracy : ±(1.5%rdg+3dgt)
Current range	AC 0.0mA ~ 20.0A	Resolution : 0.1mA	Accuracy : ±(1.5%rdg+3dgt)
Phase range	0.0° ~ 360.0°	Resolution : 0.1°	Accuracy : ±1°
Frequency range	45.00Hz ~ 65.00Hz	Resolution : 0.01Hz	Accuracy : ±0.1Hz
Active power range	0.0W ~ 12kW	Resolution : 0.	Accuracy : ±(3%rdg+3dgt)
Reactive power range	0.0var ~ 12kvar	Resolution : 0.1var	Accuracy : ±(3%rdg+3dgt)
Apparent power range	0.0 VA~12kVA	Resolution : 0.1VA	Accuracy : ±(3%rdg+3dgt)
Power factor range	-1 ~ +1	Resolution : 0.001	Accuracy : ±0.03
Detection rate	About 2 second/time		
Data hold	Press HOLD key to hold data during test, "HOLD" symbol display		
Data storage	500 groups		
Silicone protective sleeve	Have		
USB interface	USB interface, uploading data to a computer for analysis of management data		
Automatic shut-down	About 15 minutes after power on, the meter will automatically shut down		
Backlight function	Yes, suitable for dark places and night use		
Instrument weight	Host : 350g(including battery), Tip-shaped current clamp : 180g*2 , Test line : 190g		
Production Compliance	IEC61010-1 CAT III 600V, IEC61010-031, IEC61326, Pollution Grade 2		
IP	IP45		

ES2020 Three-phase Digital Phase VAmeter

★ Voltage Range : AC 0.00V～600V
★ Current Range : AC 0.0mA～20.0A
★ Phase Range: 0.0°～360.0°
★ Active Power Range: 0.0W～12kW
★ Reactive Power Range : 0.0var ～12kvar
★ Apparent Power Range : 0.0VA～12kVA
★ Power Factor Range: -1～+1
★ Color LCD Display
★ With USB Interface
★ Equipped with Large Capacity Battery with Charging Function
★ With Three-phase Phase Sequence Judgment Function



PRODUCT INTRODUCTION

ES2020 three-phase digital phase volt-ampere meter, also known as multi-function three-phase digital phase volt-ampere meter, designed for on-site measurement of voltage, current, power, power factor, frequency, and phase. Widely used in electrical energy measurement, electricity inspection, power inspection, power meter and relay protection, differential detection, start-up test, industrial and mining enterprises, and other departments. It also can judge the inductive current and capacitive circuit, check the transformer wiring group, check whether the power meter is wired correctly.ES2020 is composed of a host, current clamp, test line and protective cover, and stores 500 sets of data at the same time.

TECHNICAL PARAMETERS

Function	Measure three-phase AC voltage, current, voltage phase, current phase, voltage and current phase, frequency, phase sequence, active power, reactive power, apparent power, power factor, current vector sum,judging the transformer wiring group, inductive, capacitive circuit, test secondary circuit and busbar protection system,read out the phase relationship between the CTs of the differential protection groups, check the correctness of the wiring of the watt-hour meter, repair the line equipment, etc.		
Power	3.65V lithium rechargeable battery		
Display mode	Color LCD display , 72×55mm		
Instrument size	W/H/T : 187*119*48mm		
Jaw size	Φ8mm		
Voltage range	AC 0.00V ~ 600V	Resolution : 0.01V	Accuracy : ±(1.5%rdg+3dgt)
Current range	AC 0.0mA ~ 20.0A	Resolution : 0.1mA	Accuracy : ±(1.5%rdg+3dgt)
Phase range	0.0° ~ 360.0°	Resolution : 0.1°	Accuracy : ±1°
Frequency range	45.00Hz ~ 65.00Hz	Resolution : 0.01Hz	Accuracy : ±0.1Hz
Active power range	0.0W ~ 12kW	Resolution : 0.1W	Accuracy : ±(3%rdg+3dgt)
Reactive power range	0.0var ~ 12kvar	Resolution : 0.1var	Accuracy : ±(3%rdg+3dgt)
Apparent power range	0.0 VA ~ 12kVA	Resolution : 0.1VA	Accuracy : ±(3%rdg+3dgt)
Power factor range	-1 ~ +1	Resolution : 0.001	Accuracy : ±0.03
Current vector sum	0mA ~ 60.0A	Resolution : 1mA	
Phase sequence	Normal phase : U1、U2、U3 or I1、I2、I3 cursor blinks from left to right Opposition : U1、U2、U3 or I1、I2、I3 cursor blinks from right to left		
Detection rate	About 2 second/time		
Data storage	500 groups		
Silicone protective cover	Have		
USB interface	USB interface, uploading data to a computer for analysis of management data		
Automatic shut-down	About 15 minutes after power on, the meter will automatically shut down to reduce battery consumption		
Backlight function	Yes, suitable for dark places and night use		
Instrument weight	Host : 380g(including battery),Tip-shaped current clamp : 180g*3,Test line : 190g		
Production Compliance	IEC61010-1 CAT III 600V, IEC61010-031, IEC61326, Pollution Grade 2		
IP	IP45		

ES2020B Three-Phase Digital Power Meter

★ **Voltage Range** : **AC 0.00V~600V**
★ **Current Range** : **AC 0.0mA~1000A**
★ **Phase Range: 0.0°360.0°**
★ **Active Power Range : 0.0W~600kW**
★ **Reactive Power Range: 0.0var~600kvar**
★ **Apparent Power Range: 0.0 VA~600kV**
★ **Power Factor Range: -1~+1**
★ **Equipped with Large Charging battery**
★ **With Three-phase Phase Sequence Judgment Function**



PRODUCT INTRODUCTION

ES2020B Large-diameter three-phase digital power meter, also known as multi-function three-phase digital phase volt-ampere meter. Widely used in electricity inspection, power inspection, power meter and relay protection, differential detection, start-up test, industrial and mining enterprises, scientific research institutions and other departments. It has the ability to directly measure the AC voltage, AC current, the phase between voltage, between currents and the phase between voltage and current, it also has can judge the inductive current and capacitive circuit, check the transformer wiring group, check whether the power meter is wired correctly.

TECHNICAL PARAMETERS

Function	Measure three-phase AC voltage, current, voltage phase, current phase, voltage and current phase, frequency, phase sequence, active power, reactive power, apparent power, power factor, current vector sum,judging the transformer wiring group, inductive, capacitive circuit, test secondary circuit and busbar protection system,read out the phase relationship between the CTs of the differential protection groups, check the correctness of the wiring of the watt-hour meter, repair the line equipment, etc.		
Power	3.65V lithium rechargeable battery		
Display mode	Color LCD display , 72×55mm		
Instrument size	W/H/T : 187*119*48mm		
Jaw size	Φ50mm		
Voltage	AC 0.00V ~ 600V	Resolution : 0.01V	±(1.5%rdg+3dgt)
Current	AC 0.0mA ~ 1000A	Resolution : 0.1mA	±(1.5%rdg+3dgt)
Phase	0.0° ~ 360°	Resolution : 0.1°	±1°
Frequency	45Hz ~ 65Hz	Resolution : 0.01Hz	±0.1Hz
Active power	0.0W ~ 600kW	Resolution : 0.1W	±(3%rdg+3dgt)
Reactive power	0.0var ~ 600kvar	Resolution : 0.1var	±(3%rdg+3dgt)
Apparent power	0.0VA ~ 600kVA	Resolution : 0.1VA	±(3%rdg+3dgt)
Power factor	-1 ~ +1	Resolution : 0.001	±0.03
Current vector sum	0mA ~ 3000A	Resolution : 1mA	
Phase sequence	Normal phase : U1、U2、U3 or I1、I2、I3 cursor blinks from left to right Opposition : U1、U2、U3 or I1、I2、I3 cursor blinks from right to left		
Detection rate	About 2 second/time		
Data storage	500 groups		
Silicone protective sleeve	Have		
USB interface	USB interface, uploading data to a computer for analysis of management data		
Automatic shut-down	About 15 minutes after power on, the meter will automatically shut down		
Backlight function	Yes, suitable for dark places and night use		
Instrument weight	Host : 380g(including battery),Large diameter current clamp : 440g×3,Test line : 190g		
Production Compliance	IEC61010-1 CAT III 600V, IEC61010-031, IEC61326, Pollution Grade 2		
IP	IP45		

ES2080A+ Wireless High Voltage Phasing Detector

★ **Nuclear phase voltage: 30V~550kV**
★ **Phase range: 0.0°~360.0°**
★ **Frequency range: 30.00Hz~100.0Hz**
★ **Transmit frequence: 2.4GHz**
★ **Differentiate qualitatively:**
in phase: 330°~360° and 0°~30°
out of phase: 90°~150° and 210°~270°
★ **Phase indication: phasor diagram and digital display simultaneously**



PRODUCT INTRODUCTION

ES2080A+ wireless high-voltage phasing detector applied to the power line or substation power test, verifying phase, phase test, phase sequence judgment, transformer group judgment, etc. (line voltage: 30V~550kV). This phase meter adopts wireless transmission technology, the integrated transmission distance can reach 200 meters; 3.5-inch LCD color screen, can be displayed on the same screen phase, phase sequence, frequency, and other phase meter results, dynamic phase diagram instructions, clear and intuitive; with voice prompts, "X signal normal, Y signal normal, with the same phase, different phase," etc. , so that the test is more simple and efficient.

ES2080A+ wireless high-voltage phasing detector consists of host, detector, telescopic insulating rod, etc. For high-voltage line phase verify (the voltage exceeds 220V), the detector's metal hook can be gradually close to the wire, when the induction of the electric field signals can be completed to check the phase, phase checking results are directly displayed in the wireless receiver, when the bare wire exceed 35kV, in order to ensure the safety of the use of non-contact checking must be used.

TECHNICAL PARAMETERS

Function	Voice phase detector, phase, phase sequence, frequency, power check	
Power	Host: Built-in 3.65V rechargeable lithium battery Detector: Built-in 3.65V rechargeable lithium battery	
Phase detector mode	Contact verifying phase:Bare wires below 35kV or insulated wires under 550kV may contact the wire verify the phase or non-contact verifying phase. When the bare line voltage exceeds 35kV, a non-contact phasing tester must be used, and the probe gradually approaches then verify phase of the wire	
Transmission distance	Wireless transmission, with an integrated transmission distance of about 200 meters	
Phase Identify	In phase:330°~360° and 0°~30°	Out of phase: 90°~150° and 210°~270°
Phase detection voltage	30V~550kV	
Phase Range	0.0°～360.0°；precision：≤±10°；resolution：0.1°	
Frequence range	30.00Hz~100.0Hz；precision：≤±1Hz；resolution：0.01Hz	
Transmit frequence	2.4GHz	
Display mode	3.5 inches color screen	
LCD display size	72mm×55mm	
Instrument size	Host 187×119×48mm;Detector 50×28×114mm	
Phase indication	Phasor diagram and figures are displayed simultaneously	
Work indication	The verifying phase detector has sound and light indication function, red double flashing light indicator and beep-beep-beep beep	
Data storage	500 groups, flashing the FULL symbol indicates the storage is full	
Data access	Yes, with access to the history record	
Power dissipation	Detector：80mA Max；Host：300mA Max	
Instrument quality	Detector: single about 150g (including hook, battery)；Host: about 350g (including battery);	
Suitable for safety regulations	GB13398-92, GB311.1-311.6-8, 3DL408-91 standards and the newly promulgated national power industry standard "General technical conditions for 1kV ~ 35kV portable phase detectors for live work DL/T971-2005" requirements	
	Comply with IEC61481-A2; 2004; IEC 61243-1 ed.2:2003 standard	
IP	IP45	

ES3001P Series Multifunction Earth Resistance Tester

- ★ **Soil resistivity:0.00Ωm～9999kΩm**
- ★ **Voltage to ground:0.000V～750.0V**
- ★ **DC voltage:0.000V～1000V**
- ★ **Measurement method:**
- ★ **Precision four-wire, three-wire method measurement, simple second-line, selection method, double clamp method to measure grounding resistance, average rectification**
- ★ **Data storage:500 groups**



PRODUCT INTRODUCTION

Multi-function Earth resistance tester is also called grounding resistance tester.It is an advanced grounding resistance tester with a variety of measurement methods. Using the large size HD segment code LCD screen display and microprocessor technology, through the microprocessor control precision 4-line method, 3-line method and simple 2-line method to measure the grounding resistance test. Widely used in telecommunications, electric power, meteorology, computer room, oil field, power distribution line, tower transmission line, gas station, factory grounding grid, lightning rod, etc. The instrument has the characteristics of accurate, fast, simple, stable and reliable test.

MODEL CONTRAST

Model	ES3000P	ES3001P
Function	Two and three line AC grounding resistance, AC voltage, DC voltage	Two , three and four wire AC grounding resistance, soil resistivity, AC voltage, DC voltage
Grounding resistance	0.00Ω~20.00kΩ	0.00Ω~200.0kΩ
Gesolution	0.01Ω~10Ω	0.01Ω~100Ω
Soil resistivity	-	0.00Ωm~9999kΩm
AC voltage	0.000V~750.0V	
DC voltage	0.000V~999.9V	

TECHNICAL PARAMETERS

Base condition	23℃±5℃，Below 75%rh
Power	10.95V lithium battery (built-in) full charge can be measured continuously 1000 times in AC resistance mode
Backlight	Controlled backlight, suitable for dim place use
Auto shut off	"APO" indicates automatic shutdown after 15 minutes (default). The shutdown time can be customized
Measuring time	Voltage to ground: about 3 times/SEC Ground resistance, soil resistivity: about 10 seconds / time
Test waveform,frequency	Sine wave 128Hz
Data storage	500 groups
The electrode spacing range	0.1m～100.0m
USB interface	With USB interface, for data reading, save record data, etc
Bluetooth APP	With remote control, real-time monitoring, data reading and other functions
Auxiliary grounding test	With auxiliary grounding resistance value test function , 0.00kΩ ~ 200.0kΩ(Rh max = 3kΩ+100R < 50kΩ ; Rs max = 3kΩ+100R < 50kΩ)
Weight	Instrument :1880g(with batteries); Test cable:1300g(Includes simple test cables)
Suitable for safety regulations	IEC61010-1(CAT Ⅲ 300V、CAT Ⅳ 150V、 degree of pollution);IEC61010-031; IEC61557-1(earth resistance);IEC61557-5(soil resistivity); JJG 366-2004(earth resistance meter)
IP	IP45

ES3002E Multifunction Earth Resistance Tester

- ★ **Soil resistivity:0.00Ωm～9999kΩm**
- ★ **Voltage to ground:0.000V～50.00V**
- ★ **DC voltage: 0.000V～50.00V**
- ★ **AC Current:0.00A～1000.0A**
- ★ **Measurement method:**
  Precision four-wire, three-wire method measurement, simple second-line, selection method, double clamp method to measure grounding resistance, average rectification
- ★ **Data storage:500 groups**



PRODUCT INTRODUCTION

Multi-function Earth resistance tester is also called grounding resistance tester.Its advanced grounding resistance tester integrating a variety of measurement methods,in addition to the function of the traditional auxiliary ground pole measurement and grounding resistance, the instrument also has the unique function of no auxiliary ground pole measurement.Using color display and microprocessor technology,measure the grounding resistance test by microprocessor control precision 4-line method, 3-line method, simple 2-line method, selection method and double clamp method.Using large diameter current clamp design, using double clamp measurement technology, without playing auxiliary ground pole, without isolating the ground body from the equipment,the online measurement was achieved.Widely used in telecommunications, electric power, meteorology, machine room, oil field, power distribution line, iron tower transmission line, gas station, factory grounding network, lightning rod, etc.The instrument has the characteristics of test accuracy, speed, simplicity, stability and reliability.

TECHNICAL PARAMETERS

2/3/4 wire method grounding resistance	0.000Ω~200.00kΩ	Precision:±1.5%rdg±70dgt	Resolution:0.001Ω
DC resistance	0.000Ω~200.00kΩ	Precision:±1.5%rdg±70dgt	Resolution:0.001Ω
Selection method for grounding resistance	0.00Ω～3.000kΩ	Precision:±2%rdg±30dgt	Resolution:0.01Ω
Dual-clamp grounding resistance	0.00Ω～200Ω	Precision:±10%rdg±10dgt	Resolution:0.01Ω
Soil resistivity	0.00Ωm～9999kΩm	Precision:ρ=2πaR	Resolution:0.01Ωm
Voltage to ground	0.000V～50.00V	Precision:±1.5%rdg±50dgt	Resolution:0.001V
DC voltage	0.000V～50.00V	Precision:±1.5%rdg±50dgt	Resolution:0.001V
AC Current	0.00A～1000.0A	Precision:±2%rdg±50dgt	Resolution:0.01mA
Base condition	23℃±5℃，75%rh below		
Power	10.95V lithium battery (built-in) full charge can be measured continuously 1000 times in AC resistance mode		
Auto shut off	"APO" indicates automatic shutdown after 15 minutes (default).The shutdown time can be customized		
Measurement time	AC current: about 3 times / second AC current: about 3 times / second Ground resistance, soil resistivity: about 10 seconds / time		
Backlight	Controlled backlight, suitable for dim place use		
Test waveform,frequency	Sine wave 128Hz		
Data storage	500 groups		
The electrode spacing range	0.1m～100.0m		
USB interface	With USB interface, for data reading, save record data, etc		
Weight	Instrument: 1975g (including battery),Current clamp: 940g (2 bars),Test line: 1300g		
Suitable for safety regulations	IEC61010-1(CAT Ⅲ 300V、CAT IV 150V、Pollution degree 2);IEC61010-031; IEC61557-1(earth resistance);IEC61557-5(soil resistivity);		
IP	IP45		

ES3022 Multi-function clamp earth resistance tester (3/4wires clamp)

★ **Integrate the functions of clamp method, ground pile method, selection method, soil resistivity, ground voltage, etc.**
★ **Clamp resistance: 2000Ω**
★ **Ground pile resistance: 30kΩ**
★ **Current: 60A (resolution: 1uA)**
★ **Soil resistivity: 9999kΩm**
★ **Voltage:600V**
★ **Bluetooth connection**
★ **USB data upload**
★ **No self-check, color screen display**



PRODUCT INTRODUCTION

The ground-pile clamp ground resistance tester is controlled by a microprocessor and can accurately detect ground resistance. It uses fast filtering technology to minimize interference. At the same time with data storage and data upload functions.

MODEL CONTRAST

Model	ES3022	ES3022E	ES3022F
Clamp resistance Range	0.00Ω-1500Ω	0.00Ω-1800Ω	0.00Ω-2000Ω
Leakage current range	0.000mA-40A	0.000mA-50A	0.000mA-60A
Current resolution	1uA	1uA	1uA
Three-four-wire method range	0.00Ω-3000Ω	0.00Ω-30kΩ	0.00Ω-30kΩ
Soil resistivity range	○	0.00Ω-9999kΩm	0.00Ω-9999kΩm
Ground voltage range	600V	600V	600V
Bluetooth	○	○	●
Built-in rechargeable battery	●	●	●
TFT Color display	●	●	●
USB Data upload function	●	●	●
Data storage	●	●	●
Backlight	●	●	●

TECHNICAL PARAMETERS

Function	Ground resistance test, loop resistance test, AC current test, AC voltage test
Accuracy guaranteed temperature and humidity	23°C ±5°C, below 75%rh
Power Supply	DC 3.7 V lithium battery
Resistance resolution	0.01Ω
Voltage resolution	0.01V
Display	2.4 inch color LCD screen
LCD Size	46mm × 29mm
Meter Dimension	273mm × 106mm × 53mm
Measure time	1 time/sec
Data storage	Maximum 500 groups of data, display "FULL" symbol to indicate that the storage is full
Overflow display	“OL” symbol indication when over-range overflow
Automatic shut-down	Turn off automatically after 15 minutes
Power consumption	750mA MAX
Quality	Meter: 975g (including battery)
Production Compliance	IEC61010-1(CAT III 300V, CAT IV 150V, Pollution Grade 2, IEC61010-031; IEC61557-1
IP	IP45

ES3035+ Series Insulation Resistance Tester

★ **Function: insulation resistance test**
voltage test
★ **Rated Voltage(V): 250; 500; 1000;**
2500; 5000; 10k
★ **Insulation Resistance Range: 0.1MΩ~2000GΩ**
★ **Short Circuit current: ≥5mA**
★ **DC voltage range: 0~1000V**
★ **AC voltage range: 0~750V**
★ **Data Storage: 500 group**
★ **Have USB interface**
★ **Charging function**



PRODUCT INTRODUCTION

ES3035+ series digital insulation resistance meter, also name megohmmeter, high voltage insulation resistance tester, is used for insulation resistance test. This instrument has a large LCD screen gray backlit display, data storage, data review, alarm, Automatic discharge, charging, automatic shutdown and other functions. At the same time, it also has the function of measuring absorption ratio and polarization index of AC voltage and DC voltage. The machine is beautiful and upscale, has a wide range, high resolution, convenient operation, easy to carry, accurate, reliable, stable performance, large output power, strong anti-interference ability.

MODEL CONTRAST

Model	ES3035+(5000V)	ES3035E+(10kV)
Rated voltage(V)	100 ; 250 ; 500 ; 1000 ; 2500 ; 5000	250 ; 500 ; 1000 ; 2500 ; 5000 ; 10k
Insulation resistance range	0.01MΩ~2000GΩ	0.01MΩ~2000GΩ
Resolution	0.01MΩ	0.01MΩ
Accuracy	±3%rdg±5dgt	±3%rdg±5dgt
Output short-circuit current	≥5mA(5000V)	≥5mA(10KV)
DAR & PI	Have	Have
USB connect computer	Have	Have

TECHNICAL PARAMETERS

Function	Insulation resistance test, voltage test
DC Voltage Range	0~1000V resolution：0.1V
AC Voltage Rang	0~750V resolution：0.1V
Power	10.95V rechargeable battery
Backlight	Controllable gray screen backlight, suitable for use in dim places
Dispaly mode	4-bit large LCD display, gray screen backlight
LCD display size	108mm×65mm
Instrument size	L/W/H：277.2mm*227.5mm*153mm
Test Line	High voltage test line red 3 meter, black 1.5 meter, green line 1.5 meter
Data Storage	500 groups, "FULL" symbol indicates that storage is full
Data Review	Data review function: "READ" symbol display
Overflow Display	Exceed measurement range overflow function: “OL” symbol display
Alarm Function	Alarm when the measured value exceeds the alarm setting value
Power consumption	Standby: 30mA Max(backlight off); Turn on back light: 42mA Max; Measure：200mA Max(backlight off)
Instrument weight	2720g(including battery)
Automatic shut-down	The instrument will automatic turn off after about 15 minutes without operation.
Insulation Resistance	≥50MΩ(between Measuring line and housing)
Pressure Resistance	AC3kV/50Hz 1min
Production Compliance	IEC61010-1, 5.IEC60529(IP54), Pollution Grade 2, CAT III 300V CAT III 1000V CAT IV 600V
IP	IP54

ES3045 Series Digital Insulation Resistance Tester

★ **Function: insulation resistance test voltage test**
★ **Rated Voltage(V): 500; 1000; 2500; 5000; 10k; 15k**
★ **Insulation Resistance Range: 0.01MΩ ~ 50TΩ**
★ **Capacitance measurement: 10nF ~ 50uF**
★ **Short Circuit current: ≥6mA**
★ **DC voltage range: 1000V**
★ **AC voltage range: 750V**
★ **Data Storage: 500 group**



PRODUCT INTRODUCTION

ES3045 series digital insulation resistance meter, also name megohmmeter, high voltage insulation resistance tester, is used for insulation resistance test. This instrument has a large LCD screen gray backlit display, data storage, data review, alarm, Automatic discharge, charging, automatic shutdown and other functions. At the same time, it also has the function of measuring absorption ratio and polarization index of AC voltage and DC voltage.

It is suitable for measuring the resistance value of various insulating materials and the insulation resistance of transformers, motors, cables and electrical equipment.

At the same time, with step adjustment voltage function can output a variety of different voltage levels (such as 15kV models can produce 12 kV and other voltage levels, a wider range of use)

MODEL CONTRAST

Model	ES3045	ES3045E	ES3045F
Rated applied voltage(V)	100; 250; 500; 1000; 2500; 5k	250; 500; 1000; 2500; 5k ; 10k	500; 1000; 2500; 5000; 10k ; 15k
Resistance limit range	0.01MΩ ~ 10TΩ	0.01MΩ ~ 35TΩ	0.01MΩ ~ 50TΩ
Resolution	0.01MΩ	0.01MΩ	0.01MΩ
Accuracy	±3%rdg±5dgt	±3%rdg±5dgt	±3%rdg±5dgt
Output short-circuitt current	≥6mA	≥6mA	≥6mA

TECHNICAL PARAMETERS

Function	Insulation resistance test, voltage test, current test, capacitance test		
Basic condition	23℃±5℃ , below 75%rh		
DC voltage range	0.1 ~ 1000V	accuracy : ±1.5%rdg±3dgt	Resolution: 0.1V
AC voltage range	0.1 ~ 750V	accuracy : ±1.5%rdg±3dgt	Resolution: 0.1V
DC current measurement	0.01nA ~ 6mA	accuracy : ±5.0%rdg±2dg	Resolution: 0.01nA
Capacitance test	10nF ~ 50uF	accuracy : ±10%rdg±5dg	Resolution: 10nF
Absorption ratio and polarization index measurement	Have		
Power	10.95V rechargeable battery		
Backlight	Controllable gray screen backlight, suitable for use in dim places		
Display mode	4-bit large LCD display, gray screen backlight		
Instrument size	240mm (L)*188mm (W)*85mm (H)		
USB interface	With USB interface, software monitoring, storage data can upload computer, save and print		
Communication line	USB communication line 1pc		
Test line	High voltage rod red line 3 meters, high voltage test line black line 1.5 meters, green line 1.5 meters		
Alarm function	When the measured value exceeds the alarm set value, an alarm prompt is issued.		
Instrument weight	2720g(including battery)		
Production Compliance	IEC61010-1, 5.IEC60529(IP54), Pollution Grade 2, CAT III 300V CAT III 1000V CAT IV 600V		
IP	IP54		

ES3050 Digital DC Resistance Tester

★ **Function:Equipotential bonding resistance test between metal components, low-value resistance test, resistance test of connecting conductors between ground and ground electrodes, contact resistance test, etc.**
★ **DC resistance range: 0.0001Ω~30.00kΩ**
★ **Resolution:0.0001Ω**
★ **Test current:≥1A**
★ **DC voltage range: 0~1000V**
★ **AC voltage range: 0~750V**
★ **USB interface: have USB interface**



PRODUCT INTRODUCTION

ES3050 digital equal potential tester is also known as micro-ohmmeter, ohmmeter, DC grounding resistance tester, using the most microprocessor technology, four-wire test, safe and reliable.It is a special instrument for detecting equipotential bonding quality between metal components of objects such as housings, lightning protection belts, ground beams, structures, cabinets, steel bars, pipes, windows, guardrails, radiators, and assembly lines.It can also measure the resistance of the connection conductors between various electrical equipments and earth ground, the DC resistance of transformers, and also can measure the contact resistance of switches and socket contacts, coils, metal wires, welding points and other low-value resistances.

TECHNICAL PARAMETERS

Function	Equipotential bonding resistance test between metal components, low-value resistance test, resistance test of connecting conductors between ground and ground electrodes, contact resistance test, etc.		
DC resistance range	0.0001Ω ~ 30.00kΩ	resolution：0.0001Ω	accuracy：±1%rdg±5dgt
Test method	Four-wire test		
Test current	≥1A		
Open circuit voltage	≤7V		
Capacity factor	Measuring capacity factor≤15W		
DC voltage range	0.0V ~ 1000V DC	resolution：0.1V	accuracy：±1 5%rdg±3dgt
AC voltage range	0.0V ~ 750V AC	resolution：0.1V	accuracy：±1.5%rdg±3dgt
Power	7.4V rechargeable battery		
Backlight	Controllable gray screen backlight, suitable for use in dim places		
Display mode	4-bit large LCD display, gray screen backlight		
Measurement instructions	LED flashing indicator during measurement, LCD countdown display		
LCD size	108mm×65mm		
Instrument size	L/W/H：277.2mm×227.5mm×153mm		
Test line length	Red 5m，black 5m each 2PCS		
Measure time	Resistance test：about 7 second/time；Voltage test：about 2times/sec		
USB interface	With USB interface, software monitoring, storage data can be uploaded to the computer, save and print		
Communication Line	USB Communication Line 1PC		
Data storage	500 groups，"MEM" stores indicates, the "FULL" symbol indicates that the storage is full		
Data review	Data review function: "MR" symbol display		
Overflow display	Over-range overflow function: "OL" symbol display		
Alarm function	Alarm when the measured value exceeds the alarm setting value		
Battery voltage	Real-time display of battery power, reminding timely charging when battery voltage is low		
Automatic shut-down	The instrument automatically shuts down after about 15 minutes without operation.		
Power consumption	Standby: 30mA Max(backlight off); Turn on backlight: 43mA Max; Measure：2A Max(backlight off)		
Production Compliance	IEC61010-1, CAT III 600V, Pollution Grade 2, JJG724-1991, JJG166-1993		
IP	IP45		

ES3070 Handheld DC Resistance Tester (10A)

★ **Function: Mainly used to measure transformer DC resistance, transformer winding resistance, ground network connection continuity, cable wire resistance, etc.**
★ **Resistance Range: 10.0uΩ-50.00kΩ**
★ **Resistance resolution: 0.1 uΩ**
★ **Test current: 10A, 5A, 1A, 0.1A, 10mA, 1mA**
★ **Accuracy: 0.2%**
★ **USB interface: with USB interface**
★ **Touch screen operation: Yes**



PRODUCT INTRODUCTION

ES3070 Portable DC Resistance Tester, also known as transformer DC resistance tester, DC resistance rapid tester, grounding conductivity tester, adopts microprocessor technology, four-wire test, safe, precise and reliable.Is mainly used for measurement of transformer winding resistance, transformer winding resistance, ground down lead conduction testing, the wire resistance of the cable, switch, socket, relay contact resistance, winding, motor, shell and equipment, lightning protection zone, ground beam, structure, rack, steel, pipe, Windows, fence, radiator, pipeline connection between objects such as metal components resistance test.It is widely used in telecommunication, electric power, meteorology, machine room, oil field, electric power distribution line, tower transmission line, gas station, factory grounding grid, lightning rod and so on.

ES3070 Portable DC Resistance Tester is composed of a host, monitoring software, test line and communication line.Host handheld portable design is convenient for field application, with charging function without on-site power search, full-color large LCD display, clear at a glance, easy to use touch screen operation, port overload protection function.Large capacity storage 500 groups of data, resistance measurement range: 10.0uΩ~50.00 kΩ , measuring accuracy: ±0.2%FS±10dgt.The upper computer software has the functions of reading, consulting, saving and reporting historical data.

TECHNICAL PARAMETERS

Function	Is mainly used for measurement of transformer dc resistance, transformer winding resistance, network connectivity, cable conductor resistance, contact resistance of switches, connectors, relays, winding, motor, transformer winding resistance and metal riveting resistance, metal component coupling between resistance test, low resistance testing, contact resistance testing, etc.
Resistance range	10.0uΩ-50.00kΩ
Resolution ratio	0.1 uΩ
Detection method	The four-wire test
Maximum short circuit current	10A
Overload protection	Yes
Self discharge	Yes
Power	DC 9.6V3800mAh large-capacity lithium battery
Back light	Yes, suitable for dark places
Display mode	LCD Full-color display
Touch screen operation	Yes
The LCD size	Length and width: 108mm × 65mm
Size of instrument	Length, width and height: 240mm × 188mm × 85mm
USB interface	With USB interface
Data storage	500 groups
Auto power -off	Turn off the meter after no operation for about 15 minutes
Power dissipation	Standby: approx.120mA (20% brightness) Measurement: 27W Max
Weight	Instrument: 1100g(including batteries) Test line: 850g
Withstand voltage	AC 3700V/ RMS (between circuit and housing)
Production Compliance	IEC61010-1, CAT III 600V, Pollution Grade 2, JJG724-1991, JJG166-1993
IP	IP45

ES3072 DC Resistance Tester (20A)

★ **Power supply:Built-in: 12.8V 12Ah rechargeable lithium iron phosphate battery**
★ **Resistance range:10.0uΩ-1000.0kΩ**
★ **Resolution:0.1 uΩ**
★ **Accuracy:±0.2%FS**
★ **Test method:Four wire method test**
★ **Maximum short circuit current:20A**
★ **Data storage:800sets**



PRODUCT INTRODUCTION

ES3072 DC resistance tester is also known as transformer DC resistance tester, DC resistance rapid tester, grounding conduction tester, using microprocessor technology, four-wire method test, safe, precise and reliable. It is mainly used to measure the resistance of transformer winding, transformer resistance resistance, grounding conductor conduction test, wire resistance, contact resistance, cable resistance, coil, relay, motor, equipment shell, lightning belt, beam, structure, cabinet, steel bar, water pipe, window, metal, fence, radiator, assembly line test between metal components. It is widely used in telecommunications, electric power, meteorology, machine room, oil field, power distribution line, iron tower transmission line, gas station, factory grounding network, lightning rod, etc.

ES3072 The DC resistance tester is composed of the host machine, monitoring software, test line, communication line, etc. The host handheld portable design is convenient for field application, with charging function without field power search, full-color large screen LCD display, clear at a glance, touch screen operation is convenient and easy to use, port anti-overload function. Large capacity storage of 800 sets of data, resistance measurement range: 10.0uΩ-1000.0 kΩ, measurement accuracy: ± 0.2%FS ± 10 dgt. The upper computer software has the functions of historical data reading, consulting, saving, reporting and so on.

TECHNICAL PARAMETERS

Type of material	Optional Cu, Al, Fe, Au, Ag materials	
Resistance range	10.0uΩ-1000.0kΩ	
Resolution	0.1 uΩ	
Accuracy	±0.2%FS	
Test method	Four wire method test	
Test current	20A、10A、5A、1A、0.1A、10mA、1mA	
Temperature detection	The temperature probe	
Temperature conversion	Yes, in the temperature conversion, it can be converted to 75℃ measurement results	
Alert setting function	Yes	
Overload protection	Yes	
Self discharge	Have, LCD display reminder	
Power supply	Built-in: 12.6V 12Ah rechargeable lithium iron phosphate battery	
Charging function	Yes,14.6V/3A	
Backlight	Yes, sliding adjustable, suitable for dim place use	
Display mode	5-inch touch (854dots 480dots) Full-color LCD display	
Touch screen operation	Yes	
Instrument size	Length 277.2mm×width227.5mm×high153mm	
Test cables length	5 meters, red, black each	
Cloud services	Android APP, the upper machine	
USB cable	USB one pcs communication cable	
Data transmission	USB/Blue tooth	
Data access	There is a data access function	
Overflow display	Overload overflow function: The OL symbol display	
Power dissipation	Standby: about 230 mA (20% brightness)	Measured at: 27W Max
Weight	Instrument: 2300g (including battery)	Test cables: 850g
Production Compliance	IEC61010-1, CAT III 600V, Pollution Grade 2, JJG724-1991, JJG166-1993	
IP	IP45	

ES3080 Three-channel DC resistance tester

★ Function: DC resistance measurement, transformer DC resistance measurement
★ DC Resistance:0.0001mΩ~5000Ω
Accuracy: 0.2%FS±5dgt
Minimum resolution: 0.001mΩ
★ Output current display: 0.01mA~20.000A
★ Replace the resistance: the winding material can be converted to the measurement temperature
★ Built -in thermist printer
★ With 500 sets of data storage functions
★ High -definition touch screen
★ USB computer



PRODUCT INTRODUCTION

ES3080 three -channel DC resistance tester, also known as industrial frequency ground resistor tester, ground resistance table, etc., is a common instrument for testing and measurement of ground resistance. It uses a new type of inverter AC power, dual -frequency measurement technology, large -touch color screen and micro -processing machine technology to meet the second -line, third -line, and fourth -line test impedance requirements. At the same time , Phase angle and other parameters. It is suitable for telecommunications, power, meteorological, machine rooms, oil fields, electric power distribution lines, iron tower transmission lines, gas stations, factory grounding networks, lightning rods, etc., complies with the standards of electric substation and lightning protection device detection instruments. The instrument testing is accurate, fast, simple, stable and reliable.The maximum opening voltage of this tester has a maximum opening voltage of 27V, and the maximum short -circuit current can reach 20A. Micro -processor control and automatic dual -frequency technology can accurately measure the ground impedance value in the 50Hz industrial frequency state in a strong interference state. The large screen display is clear at a glance. At the same time, 100 sets of data are stored, and the resistance measurement range: 0.100mΩ ～ 5000Ω. The measurement data can be exported by the thermist printer, the U disk and the upper machine computer software export the measurement data.The ES3080 three -channel DC resistance tester consists of the host, the test line, etc., which has the functions of historical data reading, consulting, preservation, printing and other functions.

MODEL CONTRAST

Function	DC resistance measurement, transformer DC resistance measurement		
DC Resistance	DC Resistance:0.0001mΩ~5000Ω	Accuracy:0.2%FS±5dgt	Minimum resolution:0.0001mΩ
Output current display	0.01mA~20.000A		
Output current display	Can be converted to the measurement temperature of the winding material		
Three -phase imbalance rate	Automatically display three -phase winding imbalance rate		
Separate position	You can manually set the distribution position manually at the setting interface		
Overload protection	Yes		
Automatic discharge	Yes		
Rated measurement power	1000W		
Power supply	AC 220V 10A(50Hz)		
Backlight	Adjustable backlight brightness		
Measurement method	Four -line test		
Magnetic Test	High, low -voltage output current, test low -pressure resistance		
Short -circuit test current	0.2A, 0.5A, 2A, 5A, 10A, 20A (set settings)		
Short -circuit maximum current	DC 20A±10%		
Voltage maximum voltage	DC 27V±10%		
Display mode	7 -inch touch color screen		
Touch screen	Yes		
Measuring instruction	Seting progress display, measurement prompt animation display		
Meter size	High length and height: 450mm × 350mm × 180mm		
Standard test line	Article 8		
U disk interface	Used to connect to the U disk special interface		
USB interface	Save data to the computer -specific software through the USB cable		
Print	Built -in thermist printer		
Printed paper specification	57*40mm		
Data storage	500 groups		
Suitable for security	IEC61010-1, IEC1010-2-31, IEC61557-1,5, IEC60529 (IP54), pollution, etc. 2. CAT Ⅲ 300V		
IP	IP54		

ES3090 Loop Resistance Tester

★ **Test method : four-wire method**
★ **Measuring range: 0.10μΩ~3500mΩ**
★ **Test accuracy:**
Readingx0.15%+0.5μΩ
★ **Current output:**
Coarse adjustment gear: ≤5A, 10A, 30A, 50A, 80A, 100A, 200A, 220A
Thin strip gear: step value 2.5A, up to 87 gears of current



PRODUCT INTRODUCTION

Loop resistance tester , also known as microohmmeter and contact resistance tester , is a product carefully developed by our company to measure various high-voltage switch contact resistance, high-voltage circuit breaker contact resistance, metal welding component connection resistance, metal conductor loop resistance, Instrument for precision microohm resistors.

TECHNICAL PARAMETERS

Model	ES3090	ES3090E
Maximum test current	100A	220A
Remark		Currents above 100A only support fast mode
Function	Various contact resistance tests such as high-voltage switches and high-voltage circuit breakers; connection resistance tests of metal welded components; various loop resistance tests such as metal conductors; precision micro-ohm resistance tests	
Power supply	Built-in: DC11.1V 4200mAh	
Test method	Four-wire method	
Charger	14.8 V charger	
Display mode	5.6-inch industrial-grade high-brightness color LCD screen	
Test interface	I+ (positive current), I- (negative current), U+ (positive voltage), U- (negative voltage)	
Current output	Coarse adjustment gear: ≤5A, 10A, 30A, 50A, 80A, 100A, 200A, 220A	
	Thin strip gear: step value 2.5A, up to 87 gears of current	
Measuring range	≤5A: 100uΩ~3500mΩ; 10A: 20uΩ~200mΩ; 30A: 10uΩ~20mΩ; 50A: 2uΩ~15mΩ; 80A: 1uΩ~10mΩ; 100A: 0.1uΩ~5mΩ; 200A: 0.1uΩ~600uΩ; 220A:0.1uΩ~500uΩ	
Minimum resolution	0.01μΩ	
Test accuracy	Readingx0.15%+0.5 μΩ	
Testing time	≤100A:Fast,10s,20s,30s,40s,50s,60s;>100A:Fast	
Data storage	999 sets of data can be stored	
Instrument size	Approx. 229 mm (length) × 166 mm (width) × 73 mm (height)	
Quality	Instrument weight: about 2kg	
Test line	Standard length: 3m	
	The current and voltage test lines are tapped at both ends. The wiring is simple and the resistance is less than 10mΩ.	
Data deletion	Select the format memory option in the settings interface to delete all data	
Data review	Enter the data review interface and press the up, down, left and right keys to browse the stored data.	
Automatic shut-down	Have	
Battery voltage	There is a battery power indicator on the instrument corner.	
Backlight	Backlight adjustable brightness	
Working current	The operating current under non-test conditions is 200 mA. The working current can be set by yourself in the test state.	
Production Compliance	IEC61010-1, CAT III 600V, Pollution Grade 2, JJG724-1991	
IP	IP45	

ES4000 Power Quality Analyzer

★ Real-time waveform display (4 channels of voltage/current)
★ True RMS values of voltages and currents.
★ Peak current and voltage
★ The maximum/minimum value of current and voltage over a period of time
★ Pharos diagram display
★ Harmonic measurement of each phase, up to the 50th harmonic
★ Calculation of Total Harmonic Distortion (THD)
★ Active/reactive/apparent power value and total value of each phase
★ Transformer K factor calculation



PRODUCT INTRODUCTION

ES4000 Power Quality Analyzer is a comprehensive test instrument specially designed by our company for three-phase, multi-functional, intelligent and simple man-machine operation. Easy to use, large LCD color display, high resolution, bilingual interface in Chinese and English, box structure and other features. Simultaneous measurement of 4 currents (ABC three-phase and neutral current), 4 voltages (ABC three-phase voltage and neutral to ground voltage), current and voltage peaks, maximum and minimum values over a period of time, three-phase Balance, short-time voltage flicker, transformer K factor, active power, reactive power, apparent power, power factor, displacement power factor, active energy, reactive energy, apparent energy, harmonic ratio, total harmonic distortion Degree; Display real-time waveform of current and voltage, phasor diagram, harmonic ratio column chart; dynamically capture voltage and current transients, monitor startup current, monitor various power parameters and generate alarm list, record test data for a long time and generate trend graph .

This measurement and analysis instrument that can more quickly and accurately eliminate complex power system faults and monitor and maintain power quality parameters more comprehensively and systematically.

TECHNICAL PARAMETERS

Power	Rechargeable lithium battery pack 9.6V, external charger	
Display mode	LCD color screen ,640dots×480dots , 5.6 inch , display field 116mm×88mm	
Instrument size	L/W/T：277.2mm×277.5mm×153mm	
Number of channels	4 channels voltage , 4 changels current	
Line voltage	1.0V ~ 2000V	
Phase voltage	1.0V ~ 1000V	
Current	008 tip small current clamp：10mA ~ 10.0A	Jaw size：8mm×15mm (selection)
	020 round-mouth current clamp：0.10A ~ 100A	Jaw size：20mm×20mm (selection)
	050 round-mouth current clamp：1.0A ~ 1000A	Jaw size：50mm×50mm (selection)
	Rogowski coil：10A ~ 6000A	
	Optional transformer：Instrument port input current 1mA ~ 500mA	
Electric power and power quantity parameter	W , VA , var , PF , DPF , cosφ , tanφ	
Electric energy parameter	Wh , varh , Vah	
Harmonic	Have , 0 ~ 50 times	
Total harmonic distortion	Have , 0 ~ 50 times , each phase	
Expert mode	Have	
Number of transient record groups	150 groups	
Voltage flicker	Have	
Start current mode	Have , 100 second	
Three-phase unbalance	Have	
Record	300 days (Record 20 parameters at the same time, record 1 point every 5 seconds)	
Minimum/maximum recorded value	Yes, can measure the maximum and minimum within a period of time	
Alarm	40 different types of parameter selection, 12800 group alarm logs	
Peak value	Have	
Phasor diagram display	Automatic	
Screenshot capacity	60	
Production Compliance	IEC 61010 1000V Cat III / 600V CAT IV, IEC61010-031, IEC61326, Pollution Grade 2	
IP	IP45	

PRECISION INSTRUMENTS

Measurement	Measuring range	Display resolution	Aximum error within the reference range.
Frequency	40Hz ~ 70Hz	0.01Hz	±(0.03)Hz
Phase voltage true RMS	1.0V ~ 1000V	Minimum resolution 0.1V	±(0.5%+5dgt)
Line voltage true RMS	1.0V ~ 2000V	Minimum resolution 0.1V	±(0.5%+5dgt)
DC voltage	1.0V ~ 1000V	Minimum resolution 0.1V	±(1.0%+5dgt)
Current true RMS	10mA ~ 6000A	Minimum resolution 1mA	±(0.5%+5dgt)
Phase voltage peak	1.0V ~ 1414V	Minimum resolution 0.1V	±(1.0%+5dgt)
Line voltage peak	1.0V ~ 2828V	Minimum resolution 0.1V	±(1.0%+5dgt)
Current peak	10mA ~ 8484A	Minimum resolution 1mA	±(1.0%+5dgt)
Peak factor	1.00 ~ 3.99	0.01	±(1%+2dgt)
	4.00 ~ 9.99	0.01	±(5%+2dgt)
Active power	0.000W ~ 9999.9kW	Minimum resolution 0.001W	±(1%+3dgt) Cosφ≥0.8
			±(1.5%+10dgt) 0.2≤Cosφ<0.8
Reactive power Inductive & Capacitive	0.000 var ~ 9999.9kvar	Minimum resolution 0.001var	±(1%+3dgt) Sinφ≥0.5
			±(1.5%+10dgt) 0.2≤Sinφ<0.5
Apparent power	0.000VA ~ 9999.9kVA	Minimum resolution 0.001VA	±(1+3dgt %)
Power factor	-1.000 ~ 1.000	0.001	±(1.5%+3dgt) Cosφ≥0.5
			±(1.5%+10dgt) 0.2≤Cosφ<0.5
Active energy	0.000Wh ~ 9999.9MWh	Minimum resolution 0.001Wh	±(1%+3dgt) Cosφ≥0.8
			±(1.5%+10dgt) 0.2≤Cosφ<0.8
Reactive energy Inductive & Capacitive	0.000varh ~ 9999.9Mh	Minimum resolution 0.001varh	±(1%+3dgt) Sinφ≥0.5
			±(1.5%+10dgt) 0.2≤Sinφ<0.5
Apparent energy	0.000VAh ~ 9999.9MVAh	Minimum resolution 0.001VAh	±(1%+3dgt)
Phase angle	-179° ~ 180°	1°	±(2°)
Tanφ(VA≥50VA)	-32.76 ~ 32.76	Minimum resolution 0.001	φ:±(1°)
Displacement power factor(DPF)	-1.000 ~ 1.000	0.001	φ:±(1°)
Harmonic ratio contains 1 to 50 times(Vrms>50V)	0.0 % ~ 99.9 %	0.1 %	±(1%+5dgt)
Harmonic angle(Vrms>50V)	-179° ~ 180°	1°	±(3°) harmonic 1 ~ 25 times
			± (10°) harmonic 26 ~ 50 times
Total harmonic rate(THD or THD-F)≤50	0.0 % ~ 99.9 %	0.1 %	±(1%+5dgt)
Distortion factor(DF or THD-R) ≤50	0.0 % ~ 99.9 %	0.1 %	±(1%+10dgt)
Transformer K factor	1.00 ~ 99.99	0.01	±(5 %)
Three-phase imbalance	0.0% ~ 100 %	0.1 %	±(1 %)

CURRENT CLAMP CHARACTERISTIC

Current clamp type	Current true value	Current true value Maximum error	Phase angle φ maximum error
008 current clamp	10mA ~ 99mA	±(1 % + 3dgt)	±(1.5°),Arms≥20mA
	100mA ~ 10.0A	±(1 % + 3dgt)	±(1°)
020 current clamp	0.10A ~ 0.99A	±(1 % + 3dgt)	±(1.5°)
	1.00A ~ 100A	±(1 % + 3dgt)	±(1°)
050 current clamp	1.0A ~ 9.9A	±(2 % + 3dgt)	±(3°)
	10.0A ~ 1000A	±(2 % + 3dgt)	±(2°)
Optional transformer	Instrument input current 1mA ~ 500mA	Selected transformer error ±1 %	Selected transformer error ±(1°)

ES4100 Handheld Power Quality Analyzers

- ★ **Four voltage measurement inputs are used to measure the voltage of the three phases and the neutral line to ground.**
- ★ **Four current measurement inputs for measuring three-phase and neutral currents.**
- ★ **Dual processor + 80kSPS. High-speed sampling, Class A high-precision acquisition.**
- ★ **8-inch large screen + glove touch control + Dual operation with physical buttons for more convenient on-site work.**
- ★ **16GB large-capacity built-in storage for up to 300 days of uninterrupted long-term recording.**
- ★ **Multistar GPS and BeiDou synchronization + end-to-end communication, dual standards for remote unattended operation and maintenance.**
- ★ **K Factor + National Standard Phase.**
- ★ **Fully customization power quality events, accurately capturing inverter and transformer faults.**



PRODUCT INTRODUCTION

The ES4100 Power Quality Analyzer is a comprehensive three-phase, multi-functional, intelligent, and user-friendly testing instrument meticulously developed by our company for on-site testing. It can simultaneously measure four current channels (three-phase A, B, C, and neutral current), four voltage channels (three-phase A, B, C, and neutral-to-ground voltage), peak values of current and voltage, maximum and minimum values over a period of time, three-phase unbalance, short-time voltage flicker, transformer K-factor, active power, reactive power, apparent power, power factor, displacement power factor, active energy, reactive energy, apparent energy, harmonic ratio, total harmonic distortion, etc.; and display real-time waveform, phasor diagrams, and harmonic ratio histograms of current and voltage .

TECHNICAL PARAMETERS

Parameter	Range	Maximum Resolution	Accuracy
Voltage	1000V/AC	0.1V	±0.1%of the nominal voltage
Voltage surge and drop	1000V	0.1V	±0.1%of the nominal voltage
Voltage harmonics / Interharmonic	100% / 1000V	0.1% / 0.1mV	≥1 %of nominal voltage：±2.5 % <1 % of nominal voltage：±0.025*nominal voltage
Voltage THD	100 %	0.1 % / 0.1 mV	±(2.5 % + 0.05 %)
Voltage imbalance	100 %	0.01 %	±0.15 %
Flash：Pinst、Pst、Plt	0 ~ 20	0.01	±5 %
Power signal voltage (≤3 kHz)	0%-15% of nominal voltage	0.1 V / 0.1%	1-3 % Nominal Voltage： ±0.15 %of the nominal voltage
Minimum voltage / Maximum value	1000 V	0.1 V	3-15 % Nominal Voltage：±5 %of the reading Of the nominal input voltage ±2 %
Current (008 Current Clamp)	1A 10A	0.01A 0.01A	±(0.7%+0.2%) ±(0.7%+0.2%)
Current (020 current clamp)	10A 100A	0.01A 0.01A	±(0.7%+0.2%) ±(0.7%+0.2%)
Current (050 current clamp)	100A 1000A	0.01A 0.01A	±(1%+0.2%) ±(1%+0.2%)
Current (300 flexible coil)	6000A	0.01A	±(1%+0.5%)
Current THD	100 %	0.1 %	±(2.5 % + 0.5 %)
Current imbalance	100 %	0.01 %	±0.15 %
Frequency	42.5 Hz ~ 69 Hz	0.001 Hz	±0.01 Hz
Voltage angle	360°	0.1°	±0.2°
Current angle	360°	0.1°	±2°

TECHNICAL INDICATORS

Number of voltage inputs	Four inputs: three-phase wire, neutral wire, and PE ground wire.
Maximum input voltage	1000 Vrms/1000 V dc (1700 Vpk)
Current input	008 range: 10mA-10A; 020 range: 0.1A-100A; 050 range: 1A-1000A; 300 flexible coil range: 10A-6000A
Sampling frequenc	80 kS/s (50/60) Hz hour)
Maximum / Minimum value	Voltage, current: Half-cycle RMS; Power: 10 cycles at 50Hz, 12 cycles at 60Hz
Power quality measurement	Harmonics: h0 - h50; Interharmonic: ih0 - ih50
Suitable for safety regulations	IEC 61010-1: Pollution level 2; IEC 61010-2-030: C AT IV 600 V, CAT III 1000 V
IP	IP45

ES6030 Transformer turns ratio tester

★ **Various test modes: single-phase test, three-phase test, three-phase blind test, Z-type test**
★ **Data storage:500 groups**
★ **Wide measurement range: variable ratio 0.9~10000**
★ **Measurement accuracy: 0.2% when the variable ratio is 0.9 to 2000, and 0.5% from 2000 to 10000**
★ **Max. resolution: 0.0001**
★ **Support for computer-side control**
★ **Support for Bluetooth control**



PRODUCT INTRODUCTION

The transformer turns ratio tester adopts microprocessor technology for measurement calculation and automatic control, which can quickly and easily measure the actual transformer ratio and group of the transformer. It is mainly used for measuring transformer transformer ratio and group in the power industry, and it is also used for measuring transformer parameters by transformer manufacturers and distributors.

The transformer turns ratio tester is composed of the main machine, monitoring software, test line, communication line, etc. The host has the charging function without the need to find electricity, full color large screen LCD display, the language can be selected in Chinese or English, at a glance, touch screen operation is easy to use, port anti-overload function, large capacity storage of 500 sets of data. The upper computer software has the functions of reading, consulting and saving historical data.

TECHNICAL PARAMETERS

Function	It is mainly used for transformer ratio and group test of three-phase transformer, transformer ratio and polarity test of single-phase transformer, PT and CT. This product can conduct blind test of three-phase transformer and change ratio and	
Type of test product	Single-phase transformer, three-phase transformer, Z-type transformer, PT, CT	
Variable ratio range	0.9~10000	
Overload protection	Yes	
Power	DC9.6V 3800mAh Large capacity lithium battery	
Charging function	Yes	
Display mode	5-inch touchscreen (854dots 480dots) full-color LCD display	
Interactive mode	Touch screen & button	
LCD size	Length * width：108 mm×65mm	
Instrument size	Length * width * height：229mm×166mm×74mm	
Mobile APP	Yes, Bluetooth connection	
Computer connect	Yes, the USB cable connection	
Data storage	500 groups	
Data access	Data access function	
Battery voltage	Real-time display of battery power indicates that the battery should be charged in time when the voltage is low	
Auto shut off	Automatic shutdown can be set for 1 to 30 minutes	
Power dissipation	Standby: about 2W (100% brightness)	Measured at: 12W Max
Weight	Instrument: 1.5kg (including battery)	Test cables: 1.7kg
Insulation resistance	Above 10 MΩ (500V between circuit and housing)	
Withstand voltage	AC 3700V / rms (between circuit and enclosure)	
Electromagnetic characteristics	IEC61010-4-3，Wireless frequency electromagnetic field≤1V/m	
Suitable for safety Regulations	IEC61010-1、CAT III 600V、Pollution grade 2	
IP	IP45	

ES7060 Cable Identification Instrument

★ **Output method:automatic identification, caliper coupling during live identification; direct connection output during power identification**
★ **Frequency:6 Adjustable:640Hz,1.28 kHz, 2.56 kHz,3.84 kHz,6.50 kHz，8.05 kHz**
★ **Output power:Maximum 15W, 5 Levels adjustable, automatic real-time impedance matching**
★ **Output voltage:The maximum peak value is about:110V**
★ **Filtering method:Hardware filtering + DSP digital filtering**



PRODUCT INTRODUCTION

ES7060 The intelligent live cable identification instrument , also known as cable identification instrument, multifunctional cable identification instrument, and intelligent cable identification instrument , is designed for power cable engineers and cable workers to solve the technical problems of cable identification . Users can use the instrument to accurately identify a target cable from multiple cables to avoid serious accidents caused by mistaken sawing of live cables. Cable identification starts with the operation at both ends of the cable, and the double numbering at both ends of the cable must be accurate. No matter how reliable the memory of the on-site staff is, it cannot replace the identification of professional instruments. This product also has the functions of live cable identification and power-off cable identification . The instrument consists of a transmitter , a transmitting current clamp /transmitting direct-connected test clamp , a receiver , a receiving flexible current clamp , etc. When identifying live cables, 20 cables can be pre-calibrated on the receiver and then identified at the remote end, which greatly saves the round-trip operation time of engineers and improves work efficiency.

Transmitter **:** transmits signals to target cables during live cable identification and power outage cable identification. Built-in large- capacity rechargeable lithium battery, automatic impedance matching, and fully automatic protection. The host uses a 5.0-inch capacitive touch LCD to display output voltage, output current, and loop impedance in real time (direct connection method) **.** It adopts an intelligent human-computer interaction interface design and supports touch gesture operation. It is easy to use, smooth to operate, and improves operating efficiency .

Receiver : It is a handheld device with a built-in high-speed microprocessor .The receiver adopts hardware filtering + DSP digital filtering algorithm dual filtering processing , which has excellent filtering performance. It also uses advanced FHD algorithm to filter interference frequencies and composite encoding of the transmitter. The current signal is extracted and decoded, combined with scientific and rigorous calibration rules, which greatly reduces the requirements for on-site personnel. The LCD directly displays the correct detection results, and the cable identification is successfully marked with √ , which is clear at a glance, convenient and easy to use, and can calibrate 20 cables at the same time. Repeat calibration to improve work efficiency.

TECHNICAL PARAMETERS

1.Transmitter technical specification

Function	Outputs composite pulse width frequency signal, signal coupling output, signal direct connection output, displays output voltage , output current , loop impedance, remaining battery voltage, and dynamic indication of launch status
Power supply	9.6V/6Ah lithium battery, fully charged, continuous working for about 8 hours (at 3rd gear output)
Output method	Automatic identification, caliper coupling when powered on; direct output when power off
Frequency	6 adjustable: 640Hz, 1.28 kHz, 2.56 kHz, 3.84 kHz, 6.50 kHz, 8.05 kHz
Output interface	Waterproof aviation socket
Output power	Maximum 15W , 5 levels adjustable, automatic real-time impedance matching
Human-computer interaction	Physical buttons, capacitive screen touch, gesture recognition
Automatic shut-down	It will automatically shut down after 30 minutes of no operation or output . The time can be set.
Automatic standby	Yes, by default, the screen brightness will be automatically reduced after 5 minutes of inactivity to save power. The time can be set.
External voltage detection	Yes, up to 150V

Charging interface	Round charging interface, DC logo
Charger	1 1 V/2A DC charger
Fixture update	Yes, update via USB
Transmitter size	275mm×226mm×150mm
LCD size	Length and width 120 mm × 70 mm; display area 110 mm × 62 mm
Weight	The transmitter is about 2.28 kg; the transmitter clamp is about 1.12 m ; the direct-connect test clamp is about 170g, and the total mass is about 4.44kg
Pressure resistant	AC 3700V/rms (in front of the top and bottom of the instrument box)
Electromagnetic properties	IEC61326(EMC)
Reference safety regulations	IEC61010-1 (CAT III 300V, CAT IV 150V, pollution level 2)
IP	IP45

2.Receiver technical specification

Function	Live cable identification, power outage cable identification, single-core cable identification, with FHD algorithm
Power supply	7.4V/2000 mAhCharable lithium battery, USB charging interface, full power continuous operation for about 6 hours
Receive frequency	6 types：640Hz、1.28 kHz、2.56 kHz、3.84 kHz，6.50 kHz，8.05 kHz
Gain	5th gear
Unique identification	Yes, the target cable display（√）
Filter mode	Hardware filtering + DSP digital filtering
FHD algorithm	Support, instrument direct results,greatly reduce the use requirements of field personnel
Calibration quantity	Number of calibrable cables: 1~20
Identification condition	Current,the current percentage of the received signal and the transmitted signal is between the calibration value 70%-130%, which is one of the conditions for successful identification.
	Signal encoding, the receiver decodes and identifies it through an algorithm,and consistency with the transmitter output encoding is one of the conditions for successful identification
	Signal phase, the receiver extracts the phase through an algorithm, and the comparison with the calibration value < 50 ° is one of the conditions for successful identification.
	Current direction, the receiver determines the direction of the current signal, and if it is consistent with the calibration value, it is one of the components of successful identification
Display mode	3.5-inch true color LCD screen display, color icon indication
Receiver size	172mm ×106mm ×42mm
Flexible current clamp	Internal diameter ：φ200mm Signal line length: 3 m
Examination range	Power outage identification:The coil can detect a composite pulse width frequency signal with a loop resistance of 0Ω ~ 30kΩ ; it can generally reach a cable length of more than 20 kilo-meters, which is mainly determined by the cable grounding resistance and cable resistance.
	Live identification:The coil can detect pulse signals with a loop resistance of 0Ω to 200Ω;when the detection loop resistance is 200Ω , the cable length can generally be 0-10 kilometers
Signal sampling rate	Adaptation for different frequency sampling rates，Max 819.2KHz
Result display period	About 2times/second
Automatic shut-down	30 minutes of no operation and or input, the meter automatically shuts down to save power. When the battery level is too low, the instrument will be shut down.
Charger	5V Charger
Receiver quality	Flexible current clamp 112g; Receiver 405g (with battery)
Withstand voltage	AC2000V/rms(Before the front and rear ends of the enclosure)

ES7080 Underground Utilities Locator

★ **Multiple detection modes: classical positioning mode, wire cruise mode, signal distortion measurement mode**
★ **Current direction determination (partial frequency), can be calibration current direction, eliminate adjacent line interference, to prevent tracking errors**
★ **Multiple detection frequencies: 11 active detection frequencies and 3 passive detection frequencies**
★ **Transmitter a variety of signal output: direct output, caliper coupling, induction method**



PRODUCT INTRODUCTION

Underground Utilities Locator, also known as Utility locator, Path Locator, is a very comprehensive path detection instrument. It has pipeline path detection, cable identification, fault search and other functions. The instrument is composed of transmitter, transmitting current clamp, receiver, receiving flexible current clamp, connecting test line, A-word frame (optional), etc.

Underground Utilities Locator can be used for path detection, pipeline survey and depth measurement of metal pipelines and underground cables under trenchless excavation. The instrument uses a variety of filtering technologies, has anti-interference ability, and can accurately locate and measure the depth. It is suitable for the detection and patrol of various underground metal pipeline, pipeline management and maintenance, municipal planning and construction, power supply and other departments, and is one of the necessary instruments of pipeline maintenance units. This function is realized by the signal transmitter, receiver, signal transmitting clamp and connecting test line.

TECHNICAL PARAMETERS

1.Receiver specifications

Function	Utility detector(cable position tracking, direction display, depth measurement, current measurement), cable identification, A-frame fault detection (optional function)
Power	8.4V large capacity rechargeable lithium battery
Input mode	Built-in receiving coil, flexible caliper, A-frame (optional function)
Receive frequency	Active detection frequency: 640Hz、1.28kHz、2.56kHz、3.20kHz、4.09kHz、8.19kHz、10.2kHz、32.7kHz、65.6kHz、81.9kHz、197kHz Power frequency passive detection frequency : 50Hz、60Hz、250Hz RF passive detection frequency band: the central frequency is divided into: 32.7kHz、65.6kHz、81.9kHz、197kHz
Utility detector modes	Wide peak method, narrow peak method, sound valley method
Utility detector display modes	Classic positioning mode, wire cruise mode, signal distortion measurement mode
Utility detection Scope of detection	Direct connection method: generally can reach the cable length of 0~20 kilometers, mainly determined by the grounding resistance, cable resistance and cable buried depth Coupling method: generally can reach the length of the cable 0~10 kilometers, mainly determined by the grounding resistance, cable resistance and cable buried depth Induction method: suitable for cables with buried depth less than 2m
Depth and current	Display the cable depth and current value in real time
Pipeline measurement depth	0-20m
Deep precision	Flat position precision accuracy: Central axis position of the target cable or pipeline: ± 5% (buried depth in 0-3m) -10% (buried depth in 3m-20m)
Positive and wrong prompt	Excluding the interference of adjacent cables, in the measurement of adjacent cables, the measurement of the adjacent cables can be distinguished according to the different signal strength and the measured current phase of the adjacent cables. In the process of tracking the cables, the phase dial and pointer can be observed to distinguish the measured cables and the adjacent cables

Sound instructions	FM tone with signal intensity
Capacity of resisting disturbance	Very narrow receiving frequency band and unique digital processing method can fully suppress the power frequency and harmonic interference of adjacent operating cables and pipelines
Cable identification	Identification mode: flexible caliper intelligent identification;Number of calibrable cables: 1~20; Calibration value: the current percentage of the received signal and the transmitted signal between 75% and 135% of the calibration value is one of the conditions for successful identification; Directionality: the transmitter clamp, receiver clamp must be in the same direction as the loading signal, which is one of the conditions for successful identification
Cable identification Range of detection	Direct connection method: can identify the signal with a circuit resistance of 0 Ω ~ 8 kΩ (generally, the length of the cable can reach 0~20 km, mainly determined by the grounding resistance and cable resistance) Coupling method: can identify the signal with circuit resistance of 0 Ω ~ 1 kΩ; (generally the cable length is 0~6 km, mainly determined by the grounding resistance and cable resistance)
Size/Weight	350mm(length)×155mm(width)×700mm(high),around 2kg
Connection interface	Type-C USB interface, air socket
Coil inner diameter	ϕ200mm(A larger caliber can be customized as needed)
Suitable for safety regulations	IEC61010-1 CAT Ⅲ 600V，IEC61010-031，IEC61326，Pollution grade 2

2.Transmitter specifications

Function	Multiple frequency signal transmission modes
Power	10.8VLarge-capacity rechargeable lithium battery
Output method	Direct connection method, caliper coupling method, induction method
Output mode	Automatic identification, according to different accessories
Output frequency	640Hz , 1.28kHz , 2.56kHz , 3.20kHz , 4.09kHz , 8.19kHz , 10.2kHz , 32.7kHz , 65.6kHz , 81.9kHz , 197kHz
Output power	15 W max, The 9 gear adjustable
Impedance	Automatic real-time impedance matching and protection function
Direct output voltage	150Vpp max
Instrument size	320mm(Length)×275mm(Width)×145mm(High)
Weight	Transmitter about 3.85kg; The transmitter clamp is about 1.18kg
Launch clamp inner diameter	φ125mm
Length of transmitter clamp	3m
P-wire	Red test cable 3m, black test cable 3m
Connection interface	USB interface, DC interface, aviation socket
Electromagnetic characteristics	IEC61326(EMC)
Suitable for safety regulations	IEC61010-1(CAT Ⅲ 300V、CAT IV 150V、class of pollution 2)
IP	IP45

ES8020 Battery Internal Resistance Tester

★ **Function:used to measure the internal resistance,voltage and temperature of lead-acid batteries,lithium batteries and other batteries**
★ **Internal Resistance Range:0.000mΩ~3.000Ω**
★ **Voltage Range:0.000V~±120.0V**
★ **Temperature measurement:-10.0℃~60.0℃**
★ **AC injection method measurement**
★ **Large-capacity lithium battery charging**
★ **With USB interface, upload to computer**
★ **With Bluetooth function, can connect to mobile phones**
★ **Pre-set PASS,WARNING,FAIL judgment thresholds**



PRODUCT INTRODUCTION

General rechargeable battery internal resistance tester Abbreviation: battery internal resistance tester.It is a measuring instrument used to measure the internal resistance, voltage and temperature of rechargeable batteries such as lead storage batteries and lithium batteries to determine the health of the battery. It can also be used as a meter to measure the ESR parameters of electrolytic capacitors (for reference only).This meter uses the AC 4-terminal test method to measure the internal resistance of the battery, and can measure the correct measurement value without being affected by the contact resistance between the test wire, terminal and battery electrode.It also has functions such as data storage, data access, alarm, and automatic shutdown.The whole machine is high-grade and beautiful, with wide measuring range, high resolution, convenient operation, easy to carry, accurate, reliable, stable performance, and strong anti-interference ability. It is an indispensable instrument for battery production, battery installation, equipment production, equipment maintenance and other scenarios.

TECHNICAL PARAMETERS

Function	Battery internal resistance measurement, battery voltage measurement, temperature measurement
Accuracy guaranteed temperature and humidity	23℃±5℃, Below 75%rh
Power supply	DC 3.7V lithium battery
Measuring range	Internal resistance measurement:0.000mΩ~3.000 Ω （4 ranges configuration） resolution：1 u Ω
	Voltage measurement: 0.000V~ ±120.0V (consisting of 2 ranges) resolution：1 mV
	Temperature measurement: -10.0℃~60.0℃ (single range configuration) resolution：0.1℃
Maximum input voltage	DC120V (between + measurement terminal and-measurement terminal), no AC input
Measurement method	Internal resistance measurement: 1 kHz AC 4-terminal test method, open-circuit terminal voltage 3V max Measuring current: 2.0mA~200mA (different measuring currents in different ranges) Temperature measurement: NTC temperature sensor (10KΩ at 26°C) A/D conversion method: successive approximation type Display update frequency: 5 times/second
Response time	200ms
Measure time	About 2 seconds
LCD Size	70.1mm × 52.6mm /3.5 inches (320*240 resolution 16-bit true color screen)
Instrument size	190mm ×121mm × 51mm
USB interface	With a USB interface, the stored data can be uploaded to the computer, saved and printed
Bluetooth connection	Yes
Hold and store function	Manual retention and storage, automatic retention and storage
Measurement judgment function	Pre-set PASS, WARNING, FAIL judgment thresholds
Battery voltage	The battery level is displayed in 5 bars, reminding to charge in time when the battery voltage is low
Automatic shut - down	No operation when power on, it will power off automatically after about 15 minutes (can be turned off in the settings)
Power consumption	300mA MIN / 500mA MAX
Weight	Meter： 480g (With battery)
Production Compliance	IEC61010
IP	IP45

ES9010 Standard Resistor

★ **Resistance value：1mΩ，10mΩ，100mΩ，1Ω，10Ω，100Ω，1kΩ，10kΩ，100kΩ**
★ **Military grade wirewound resistor**
★ **Direct shifting does not require line change**
★ **Easy to carry**
★ **The highest precision is 0.05%**



PRODUCT INTRODUCTION

ES9010 standard resistor consists of 9 1/2W high-precision military-grade wirewound resistor series to form a four-wire standard resistor. Direct shifting does not need to change the line. It is convenient to carry and replace the traditional BZ3 and other single resistors to carry the problem of inconvenient switching of different resistors. The highest accuracy is 0.05%. It is a standard resistor specially customized by us. It is mainly used for the calibration of grounding resistance tester, equipotential tester and other instruments.

TECHNICAL PARAMETERS

Range	Accuracy(%)	Temperature coefficient (ppm)
0.001Ω	2	±25
0.01Ω	0.5	
0.1Ω	0.2	
1.0Ω	0.2	
10Ω	0.05	
100Ω	0.05	
1kΩ	0.05	
10kΩ	0.05	
100kΩ	0.1	

Basic condition ：23℃±1℃ 50～60 %RH

Function	Used for the calibration of instruments such as grounding resistance tester and equipotential tester
Range	1mΩ，10mΩ，100mΩ，1Ω，10Ω，100Ω，1kΩ，10kΩ，100kΩ
Accuracy	0.05%
Wiring method	Four-wire method
Capacity factor	1/2W
Coefficient	±25ppm
Size	L/W/T：187*119*48mm
Test line length	Red 0.5m，black 0.5m each 2PCS
Weight	550g
Working temperature and humidity	-10℃～40℃；below 70%rh
Storage temperature and humidity	-20℃～60℃；below 80%rh
Insulation resistance	More than 10MΩ(Between circuit and case500V)
Pressure resistance	AC 3700V/rms(Between circuit and case)
Suitable for Safety Regulations	IEC61010-1,CAT III 600V, Pollution Degree 2, JJG724-1991 "Direct Current Digital Ohmmeter Verification Procedure", JJG166-1993 "Direct Current Resistor Verification Regulation"
IP	IP45

ES9020 Intelligent Surge Protection Device Tester

- ★ **Function: Varistor (MOV) initial voltage leakage current test, discharge tube (GDT) discharge voltage test, insulation, resistance test**
- ★ **Voltage Range: 0.0V~3000.0V**
- ★ **Leakage current measurement (uA): 0.1uA~199.9uA**
- ★ **Insulation Resistance Range: 10MΩ-1000MΩ**
- ★ **USB data transfer: have**
- ★ **Power: 10.95V Large capacity rechargeable battery**
- ★ **Display mode: 5-inch color TFT LCD**



PRODUCT INTRODUCTION

ES9020 intelligent Varistor tester, also known as lightning protection component tester, SPD field tester, used for arrester, lightning protector, surge protector, varistor, cermet discharge tube, direct space detonator and other performance test instrument. The instrument adopts the offline function of the charging function to overcome the shortcomings of inconvenient on-site operation of traditional products to be plugged in. The voltage output 3000V is more widely used, uses high-voltage short-circuit protection, automatic discharge function, and the meter is reliable, safe and durable. At the same time with insulation resistance test function, the use of luxury large-screen display, data storage, data review, compliance judgment, automatic shutdown, USB data upload and other functions. The machine is beautiful and upscale, has a wide range, high resolution, convenient operation, easy to carry, accurate, reliable, stable performance, strong anti-interference ability.

It is suitable for measuring performance parameters of various arresters and surge protectors. It also has a shockproof, dustproof, moisture-proof structure to adapt to harsh working environments.

TECHNICAL PARAMETERS

Function	Varistor (MOV) initial voltage leakage current test, discharge tube (GDT) discharge voltage test, insulation resistance test		
Base condition	23℃±5℃，below 75%rh		
Measuring voltage(V)	0.0V~3000.0V	Resolution：0.1V	Accuracy：±2%rdg±30dgt
Measuring leakage current(uA)	0.1uA ~ 199.9uA	Resolution：0.1uA	Accuracy：±2%rdg±10dgt
Insulation resistance	10 ~ 1000MΩ		
Discharge rate of discharge tube	(100±8) V/s		
Power	10.95V Large capacity rechargeable battery		
Backlight	Yes, suitable for use in dim places		
USB data transmission	Have		
Display mode	5-inch color TFT LCD		
LCD display size	108mm×65mm		
Instrument size	240mm (L)×188mm (W)×85mm (H)		
Test line	Test line red 1 m, black 1m		
Data storage	500groups		
Data review	Data review function：“MR”symbol display		
Overflow display	Over-range overflow function: "OL" symbol display		
Judging function	Measurement exceeds the setting range		
Power consumption	Standby:300mA Max，measure：900 mA Max		
Weight	1230g(including battery)		
Automatic shut-down	Instrument will automatic shut-down after 15 minutes no operation		
Insulation resistance	≥50MΩ (1000V)		
Pressure resistance	AC3kV/50Hz 1min		
Working temperature and humidity	- 10 ℃ ~ +50 ℃ < 85%RH		
Production Compliance	IEC61010-1、IEC1010-2-31、IEC61557-1,5、IEC60529(IP54)、Pollution Grade 2, CAT Ⅲ 300V		
IP	IP54		

ES9060 Series Near-Electric Alarm

★ Function: Near-power alarm, voltage detection
★ Power: CR2032 button battery
★ Power consumption: <5mA
★ Detection method: non -contact type
★ Starting method: automatic startup
★ The battery life is long, the standby time is more than 12 months



PRODUCT INTRODUCTION

ES9060 Series of near electrical appliances to provide a safe, practical and convenient new voltage alarm device.With near-power alarm, clock function.During live operation, the safe distance between the operator and the live body shall not be lower than the requirements of the relevant working procedures.After wearing the operator of the alarm, when approaching a certain distance from the live body, the alarm will send a sound and light alarm according to the corresponding safety distance to remind the electrical staff to pay attention to safety and avoid high-voltage electric shock accidents.
Using non-contact induction technology, accurate alarm, power saving and durable, standby time for up to 12 months.The unique automatic trigger detection function ensures the safety of live workers. Alarm is widely used in electric power, railway, industrial and mining enterprises and other near-electric workplaces.

MODEI CONTRAST

Product number	Alarm voltage range
ES9060AH Wrist type high voltage static alarm	1kV~500kV
ES9060AL Wrist type low pressure static alarm	40V~1kV
ES9060BH Arm type high voltage static alarm	1kV~500kV
ES9060BL Arm-type low-voltage static power alarm	40V~1kV
ES9060CH Safety helmet high-voltage static alarm	1kV~500kV
ES9060CL Safety helmet low-voltage electrostatic alarm	40V~1kV

TECHNICAL PARAMETERS

Function	Near-power alarm, voltage detection
Power supply	CR2032 button battery
Power consumption	＜5mA
Detection method	Non-contact
Starting mode	Auto start
Battery life	Standby time greater than 12 months
Alarm method	Sound and light reminder
Weight	50g
Meter size	(Wrist type) 80mm×42mm×30mm / (Arm type/Safety helmet) 87mm×37mm×22mm
IP grade	IP65
Working temperature and humidity	-10 ℃~ 40 ℃; below 80% Rh
Storage temperature and humidity	-10 ℃~ 60 ℃; below 70% Rh
Withstand voltage	Tolerance of 1000V / 50Hz between the instrument line and the housing for 1 minute
Insulation	Between the instrument line and the housing≥100MΩ
Structure	Case insulation
Suitable for safety regulations	IEC61010-1 CAT Ⅲ 600V，IEC61010-031，IEC61326，class of pollution 2

ES9080 Non-contact AC High Voltage Detector

★ **Function:Voltage detection, cable tracking**
★ **Voltage Ranges: 380V;6 kV;10 kV;27.5 kV; 35 kV;110 kV;220 kV;500 kV**
★ **Sealing grade: IP65**
★ **Sound and light prompt: Yes**



PRODUCT INTRODUCTION

ES9080 The Non-contact High Voltage Detector is safe and reliable with contactless design, which is used to check whether there is AC high voltage and low voltage. The instrument has the functions of sound prompt, light prompt, self check, compatibility with most insulating rods, etc. The whole machine is beautiful, high-end, wide range, easy to use, convenient to carry, high-precision, reliable, stable performance, strong anti-interference ability.

ES9080 The Non-contact High Voltage Detector has IP65 protection grade and shockproof structure, which is suitable for the harsh working environment. It is suitable for the non-contact detection of live voltage, the detection of cable fault, the inspection and detection of live high-voltage cable, the tracking of field wires, the detection of residual voltage or induced voltage and other detection needs.

ES9080 The Non-contact High Voltage Detector has 8 voltage detection levels, and the rated test voltage range is 380v-550kv.

TECHNICAL PARAMETERS

Function	Voltage detection, cable tracking
Reference Conditions	23℃±5℃,Below75%rh
Voltage Ranges	380V;6 kV;10 kV;27.5 kV;35 kV;110 kV;220 kV;500 kV
Insulation rob	4 sections 3.5 meters(Optional)
Power Supply	DC 9V(6F22 1PC)
Instrument size	115mm(L)x115 mm(W)x169mm(H)
Protection class	IP65
Indicating function	Sound and light Indicating when the detection voltage exceeds the setting voltage
Weight	390g (With battery)
Operating temperature and humidity	-10℃~+50℃ < 85%RH
Storage temperature and humidit y	-15℃~+55℃ < 90%RH
Safety regulations	EN 61326-1 CISPR 11 EN 61000-4-2 EN 61000-4-3 EN 61000-4-8

The packing list

Instrument	1 Pcs
Color box	1 Pcs
9V Battery	1 Pcs
Instructions, warranty	1 Set

ES050HV High Voltage Clamp current Sensor

★ **Function: High and low voltage line current, leakage current, variable ratio harmonic current, phase, electric energy, power, power factor, etc.**
★ **Jaw size: Φ50mm**
★ **Range: AC 0.0mA~1200A**
★ **Accuracy: ±1.0%**
★ **Turn Ratio: 4000:1 (can be customized)**
★ **Line voltage: AC 60kV and below**



PRODUCT INTRODUCTION

FR050HV high voltage clamp current sensor is a portable clamp design using the latest CT technology. It is designed to measure the current, leakage current, high harmonic current, phase, electric energy, power, power factor of high and low voltage lines, etc. It is not necessary to disconnect the circuit under test. It is safe, fast, high-precision, and highly stable without interruption. The sensor adopts an automatic opening and closing structure. The front pushing jaw opens and clamps the measured wire, and the back pulling jaw opens to leave the measured wire, used with the insulating rod and for high voltage line test of 60 kV and below. It can measure with a variety of measuring instruments, and can also be connected to phase detection analyzers, industrial control devices, data loggers, oscilloscopes, harmonic analyzers, power quality analyzers, high-precision digital multimeters, and more.

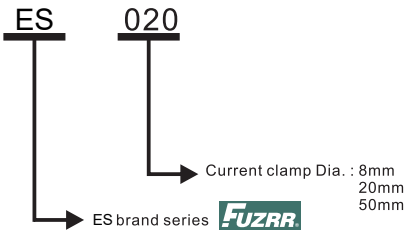
TECHNICAL PARAMETERS

Features	CT clamp structure
Function	Current, leakage current, transformation ratio, higher harmonic current, phase, electric power, power, power factor of the High and low voltage lines
Output Method	Current sensing output
Jaw Size	Φ50mm
Secondary Development Display Window	46*30mm
Range	AC 0.0mA ~ 1200A
Resolution	AC 0.1mA
Accuracy	±1.0%FS (50Hz/60Hz ; 23℃±2℃) The wire is in the center of the jaw
Phase Error	≤3°(50Hz/60Hz ; 23℃±2℃)
Turn Ratio	4000 : 1
Reference Load	RL : 0 ~ 10A≤50Ω ; 0 ~ 100A≤5Ω ; 0 ~ 1200A≤0.5Ω
Weight	300g
Dimensions	L/T/H 87*37*262mm
Output Interface	10cm long, can be connected by opening the upper and lower covers
Electric field Interference	About 10mA when the external electric field 100A approaches 30mm
Wire position	The tested wire is at the center of the jaw
Current Frequency	10Hz ~ 100KHz(measured current frequency)
Line Voltage	AC 60kV and below line test (the telescopic insulation rod should be fully open)
Working Temperature	-25° C to +55°C
Medium Strength	AC3700V/rms (between iron core and shell)

ES Series Clamp Current Sensor

★ Linearity, stability, consistency
★ High precision and strong anti-interference ability
★ Low noise, suitable for measuring leakage current
★ Wide frequency band
★ High applicability, can be used to measure unregulated waveforms such as pulse start current





PRODUCT INTRODUCTION

ES series clamp current sensor, also known as current probe,current sensor is a high-precision AC current converter. It adopts clamp-type structure design, which can be quickly and easily accessed during use. The compact size is easier to carry and use. More convenient.Mainly used for AC leakage current, high current, high harmonic current,complex waveform current, phase, electric energy, power, power factor and other detection.

ES series clamp current sensor can be used with measuring instruments such as:electric energy meter field calibrator, multi-function electric energy meter, oscilloscope,digital multimeter, cable fault detector, double clamp grounding resistance tester, etc.

MODEL CONTRAST

Model	ES008	ES020	ES050
Current clamp jaw size	8mm	20mm	50mm
Out Singal	AC Current:2500:1	AC Current:3000:1	AC Current:1000:1
Accuracy	0.2%	0.2%	0.2%
Standard color	Black	Blue	Grey
Power	N/A	N/A	N/A
External power supply	N/A	N/A	N/A
Power consumption	-	-	
Standard Interface	3.5mm Audio plug	3.5mm Audio plug	3.5mm Audio plug

TECHNICAL PARAMETERS

Function	AC leakage current, high current, high harmonic current, complex waveform current, phase, electric energy, power, power factor, etc.
Feature	Portable CT clamp structure, safe and convenient to use
Phase Error	≤1°(50Hz；23℃±2℃)
Turn Ratio and Output	Can be customized
Out Interface	Can be customized others
Output Line Length	Pliers to adapter 50cm, signal output 2m
Output mode	Current-induced output
Sheathing material	ABS
Line Voltage	Line Test under AC 1000V
Working Temperature	-25° C to +60°C
Insulation Resistance	100 MΩ @ 500Vdc
Medium strength	AC3700V/rms (between iron core and shell)
Frequency Characteristics	10Hz ~ 100kHz

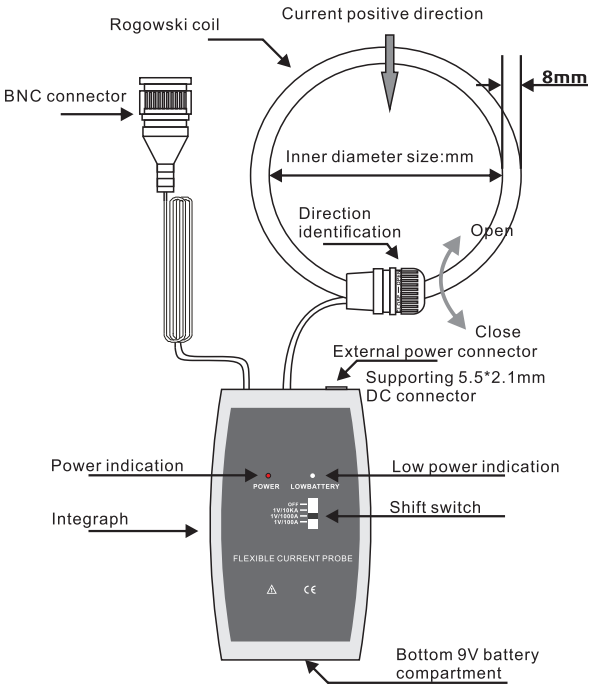
ES Series Rogowski Coil Sensor

★ **Made of special materials, good flexibility and wear resistance**
★ **Linearity, stability, consistency**
★ **High precision and strong anti-interference ability**
★ **Integral low noise, suitable for measuring milliamps of small current**



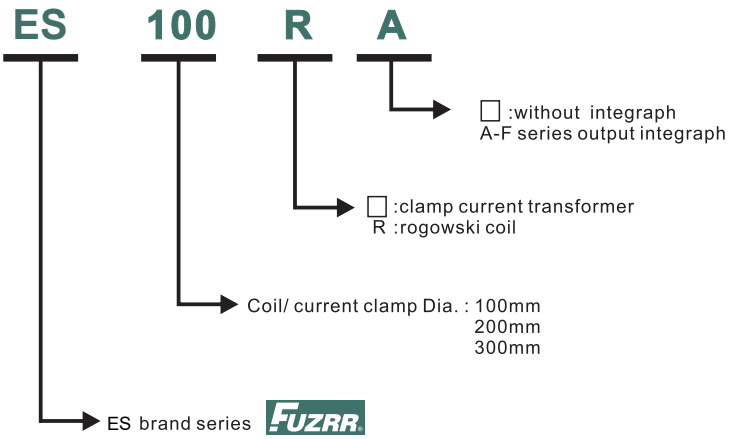
PRODUCT INTRODUCTION

ES series Rogowski coil sensor is also called flexible current sensor and current sensor. It is a toroidal coil that is wound evenly over non-ferromagnetic material. It has no hysteresis effect, almost zero phase error, no magnetic saturation, and good linearity. The output signal is the differential of current vs. time. By integrating the output voltage signal, the input current can be truly restored, and its measurement current range can range from milliamperes to millions of amperes. Mainly used for AC leakage current, high current, high harmonic current, complex waveform current, transient inrush current, phase, electric power, power, power factor and other detection. With integrator, easy to integrate into other equipment, such as: electric energy meter field calibrator, multi-function energy meter, oscilloscope, digital multimeter, cable identification instrument, cable fault detector, double clamp grounding resistance tester, double clamp phase voltmeters, digital current recorders, etc., can measure and compare a variety of electrical parameters in an uninterrupted state. FR series Rogowski coil sensor without any exposed metal conductor, non-contact measurement, safe and reliable.



ES Series Rogowski Coil Sensor

NAMING RULES



COIL PARAMETER TABLE

Model	ES100R	ES200R	ES300R
Coil Length	315mm	630mm	950mm
Coil Inside Dia	φ100mm	φ200mm	φ300mm
Coil weight	About 230g	About 250g	About 270g

INTEGRATOR PARAMETER TABLE

Model	A	B	C	D	E
Output Signal	AC:1V/1A AC:1V/10A AC:1V/100A	AC:1V/100A AC:1V/1000A AC:1V/10 kA	DC:4~20mA /100A DC:4~20mA/1000A DC:4~20mA/10kA	AC:3V/100A AC:3V/1000A AC:3V/10kA	DC:10V/100A DC:10V/1000A DC:10V/10kA
Coil Color	Black	Blue	Blue	Blue	Blue
Battery	9V Dry battery	9V Dry battery	N/A	9V Dry battery	N/A
External Power Supply	External power 8~12V	External power 8~12V	External power input：24V	External power：8~12V	External power t：24V
Power Consumption	6mA	6mA	10mA	6mA	10mA
Standard Interface	BNC	BNC	BNC	BNC	BNC

TECHNICAL PARAMETERS

Function	AC leakage current, high current, high harmonic current, complex waveform current, transient impulse current phase, electric power, power, power factor, etc.
Test Method	Flexible CT: The output signal is the differential of current vs. time. By integrating the output voltage signal, the input current can be truly restored.
Coil Line Dia.	φ8mm
Output	Only coil output：100mV/1000A , see the output for details of the supporting Integrator
Power Supply Voltage	Corresponding Integrator power supply voltage
Low Current Indication	Have
Accuracy Level	±1. 0% FS (23 °C ± 2° C, 70% RH or less, the wire is at the center of the coil)
Phase Error	≤1°(50Hz/60Hz ; 23℃±2℃)
Output Interface	BNC connector (optional audio plug, banana plug, bare wire)
Output Line Length	Pliers to adapter 50cm, signal output 2m
Electric Field Interference	Hysteresis effect, strong resistance to external electric field interference
Conductor Position	The tested wire is in the center of the coil,position error affects ≤±0.5% FS (1cm away from the port position)
Response Frequency	Without integrator: 0.1Hz ~ 10MHz , matched integrator: 0.1Hz ~ 1MHz
Line Voltage	Circuit test below AC 1000V



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